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PREFACE

Project statements -

The obligations shown in the project statements are on the basis of the appropriations and activities proposed in the 1963 Budget Estimates. In some project statements, the activities are further divided into subcategories, reflecting a more detailed description of the work conducted under the appropriation items.

Obligations reflected as subcategories in the project statements, while generally obtained from accounting records, in some instances represent the best approximation available. Wherever it has been necessary to distribute costs to activities for which total amounts cannot be taken directly from the accounts, every effort has been made to allocate such charges as accurately as possible based on other available information such as past experience, special studies, cost analyses, etc.

FOREST SERVICE

Purpose Statement

The Forest Service is responsible for promoting the conservation and wise use of the country's forest and related watershed lands, which comprise one-third of the total land area of the United States. To meet its responsibility the Forest Service engages in three main lines of work, as follows:

1. Management, protection, and development of the National Forests and National Grasslands. The 186 million acres of national forests and national grasslands are managed under multiple use and for sustained yield. Under these principles natural resources of outdoor recreation, range, timber, watershed, and wildlife are utilized in a planned combination that will best meet the needs of the Nation without impairing productivity of the land. These management and utilization principles were recognized in the Multiple Use-Sustained Yield Act of June 12, 1960 (Public Law 86-517, 74 Stat. 215).

   In managing the National Forests, technical forestry is applied to the growing and harvesting of timber crops. Estimated harvest through timber sales in the fiscal year 1962 is 9.5 billion board feet. Grazing of approximately six million head of livestock is scientifically managed to obtain range conservation along with the use of the annual growth of forage. Watersheds are managed to regulate stream flow, prevent floods, and provide water for power, irrigation, navigation, and municipalities. Management includes the handling of more than 90,000,000 visits of people to the National Forests for recreation purposes. Scientific management is applied to the extensive wildlife resources. Receipts from timber sales, grazing permits, land rentals, and water power permits exceeded $106 million in 1961.

   The protection of the National Forests includes the control of forest fires, which numbered 15,003 in the first eleven months of the calendar year 1961; the control of tree diseases and insect epidemics; and the prevention of trespass.

   The major development activities of the National Forests are reforestation, revegetation, construction of roads, recreational facilities, housing, and other necessary improvements and land acquisition and exchanges.

2. Forest Research. The Forest Service conducts research in the entire field of forestry and the management of forest and related ranges. This includes the growth and harvesting of timber, its protection from fire, insects, and diseases, the protection and management of watersheds, and improved methods for development and

management of recreation resources. It conducts studies in forest economics, marketing of forest products, and a survey of the present extent and potential growth and use of the Nation's forest resources. It also conducts research to develop new and improved products from wood, to increase the efficiency of utilizing forest products, and to advance the efficiency and mechanization of forestry operations. Results of research are made available to owners of private forest and range lands, to public agencies which administer such lands, to forest products industries, and to consumers.

The Forest Service cooperates with the Agricultural Research Service of the Department by reviewing and appraising for technical adequacy forest research projects beneficial to the United States which are conducted abroad. These projects are carried out with foreign currencies under Section 104(k) of Public Law 480, as amended, and the dollar expenses of the Forest Service in connection with this work are paid from the appropriation "Forest Protection and Utilization."

3. Cooperation with State and private forest landowners is provided by the Forest Service to obtain better fire protection on the 435 million acres of State and privately-owned forest lands, and to stimulate development and proper management of these forest lands.

Under the Soil Bank Conservation Reserve Program the Forest Service is responsible for the technical phases of planting trees on land heretofore used for crop production, and for tree seedling production, primarily through the facilities of State forestry departments.

The Forest Service is also responsible for carrying out the provisions of Section 401 of the Agricultural Act of 1956 (16 U.S.C. 568e), by providing assistance to the State Forester or equivalent State official, through advice, technical assistance, and financial contributions for increased tree planting and reforestation work, in accordance with plans submitted by the State and approved by the Secretary of Agriculture.

Other work related to forestry includes:

4. Insect and disease control. Activities to suppress and control destructive insects and diseases that threaten timber areas include two types of work carried on jointly by Federal, State, and private agencies: (a) Surveys on forest lands to detect and evaluate infestations of forest insects and infections of tree diseases and determination of protective measures to be taken, and (b) control operations to suppress or eradicate forest insects and diseases, including white pine blister rust.

5. Flood Prevention and Watershed Protection. On National Forest lands and on non-Federal forest lands within the watersheds authorized for treatment by the Department of Agriculture under the Flood Control Act of December 22, 1944, the Forest Service plans and installs watershed improvement measures, in the form of minor physical structures, cultural measures, and intensified fire control, to retard runoff and reduce flood water and sediment damage. Work on non-Federal land is carried on in cooperation with the Soil Conservation Service and the appropriate State and local agencies.

The Forest Service also cooperates with the Soil Conservation Service, appropriate State agencies and the local organizations sponsoring small watershed protection and flood prevention projects initiated under the Watershed Protection and Flood Prevention Act of 1954, as amended, in planning and installing forestry and related measures on the watersheds and in inter-agency studies of proposed water and land resource developments on river basins for the purpose of obtaining integrated resource development programs.

6. Work performed for others. The Forest Service is frequently called upon to perform services for other Federal, State, and private agencies on a reimbursable or advance payment basis. Examples of these activities are:

   a. Protection of other Federal and non-Federal forest lands intermingled with the National Forests.

   b. Disposal of slash resulting from sales of timber and the rehabilitation of such areas.

   c. Construction and maintenance of roads, and other improvements.

   d. Research investigations in forest, range, and water management and utilization problems.

   e. Cooperative survey, mapping, administrative, and reforestation projects, etc.

   f. Cooperation with defense and mobilization agencies on forest production and utilization projects, and related work.

The Forest Service maintains its central office in Washington with program activities decentralized to 10 Regional Offices, 128 Forest Supervisors' offices, 807 District Rangers' offices, 10 Forest and Range Experiment Stations, and the Forest Products Laboratory. On November 30, 1961, the Forest Service had a total of 23,937 employees including 604 full-time and 16 part-time employees in the central office and 19,470 full-time and 3,847 part-time employees in the field. The November 30 employment figures for the field are lower than average for the year because of seasonal factors. At the peak of the last field season the number of full-time employees was about 29,700 plus about 24,400 part-time and casual employees.

	Estimated Available, 1962	Budget Estimates, 1963
Appropriated funds:		
National forest and other land management appropriations	a/$165,601,000	$182,950,000
Research	26,368,000	23,150,000
Cooperation with States	16,800,000	16,800,000
Total appropriated funds (excluding permanent appropriations)	a/208,769,000	222,900,000

a/ Excludes $892,234 available from prior year balances.

Summary of Appropriations, 1962, and Estimates, 1963

Appropriation Item	Estimated Available, 1962	Budget Estimates, 1963	Increase (+) or Decrease (-)
Forest protection and utilization:			
Forest land management	$127,641,000	$140,740,000	+$13,099,000
Forest research	26,368,000	23,150,000	-3,218,000
State and private forestry cooperation	15,800,000	15,800,000	- -
Total, Forest protection and utilization	169,809,000	179,690,000	+9,881,000
Forest roads and trails	35,000,000	37,500,000	+2,500,000
Access roads	a/ 2,000,000	2,000,000	- -
Acquisition of lands for Superior National Forest	b/ 250,000	2,000,000	+1,750,000
Acquisition of lands for national forests, Special Acts	10,000	10,000	- -
Cooperative range improvements	700,000	700,000	- -
Assistance to States for tree planting	1,000,000	1,000,000	- -
Expenses, brush disposal (permanent)	9,000,000	9,000,000	- -
Roads and trails for States (permanent)	10,020,000	11,600,000	+1,580,000
Forest fire prevention (permanent)	c/ 20,000	20,000	- -
Restoration of forest lands and improvements (permanent)	d/ 196,000	196,000	- -
Payment to Minnesota (permanent)	123,300	123,300	- -
Payments to counties, national grasslands (permanent)	425,000	425,000	- -
Payments to school funds, Arizona and New Mexico (permanent)	99,200	115,000	+15,800
Payments to States, national forests fund (permanent)	25,045,000	29,000,000	+3,955,000
Total	253,697,500	273,379,300	+19,681,800
Deduct permanent appropriations (shown in detail above)	44,928,500	50,479,300	-5,550,800
Total (excluding permanent appropriations)	e/ 208,769,000	222,900,000	+14,131,000

a/ In addition, $151,218 available from prior year balances.
b/ In addition, $628,496 available from prior year balances.
c/ In addition, $7,160 available from prior year balances.
d/ In addition, $4,270 available from prior year balances.
e/ In addition, prior year balance of $112,520 available under the item "Acquisition of lands for Cache National Forest."

(a) Forest Protection and Utilization

	Forest Land Management	Forest Research	State and Private Forestry Cooperation	Total
Appropriation Act, 1962	a/$128,000,000	$26,368,000	$15,800,000	a/$170,168,000
Transferred to "Operating Expenses, Public Buildings Service," General Services Administration for space rental	359,000	- -	- -	359,000
Base for 1963	a/127,641,000	26,368,000	15,800,000	a/169,809,000
Budget Estimate, 1963	a/140,740,000	23,150,000	15,800,000	a/179,690,000
Increase or decrease	+13,099,000	-3,218,000	- -	+9,881,000

a/ In addition, $700,000 available by transfer from "Cooperative range improvements."

SUMMARY OF INCREASES AND DECREASES, 1963

For the Development Program for the National Forests and the National Forestry Research Program:

(a) National forest protection and management	+11,499,000
(b) Insect and disease control	+1,400,000
(c) Acquisition of lands (Weeks Act)	+200,000
(d) Forest research	-3,218,000
Total increase	+9,881,000

PROJECT STATEMENT

Project	1961	1962 (estimated)	Increase or decrease	1963 (estimated)
1. Forest Land Management:				
a. National forest protection and management:				
(1) Timber resource management:				
(a) Sales administration and management	$21,241,987	$22,780,000	+$400,000(1)	$23,180,000
(b) Reforestation and stand improvement	4,362,509	12,750,000	+2,500,000(2)	15,250,000
(2) Recreation-public use	15,023,584	20,500,000	+5,620,000(3)	26,120,000
(3) Wildlife habitat management	1,306,117	3,220,000	+200,000(4)	3,420,000
(4) Range resource management:				
(a) Management	4,135,395	4,610,000	+100,000(5)	4,710,000
(b) Revegetation	1,732,851	2,540,000	+120,000(6)	2,660,000
(c) Improvements	2,094,591	3,180,000	- -	3,180,000
(5) Soil and water management	1,958,553	4,090,000	+400,000(7)	4,490,000
(6) Mineral claims, leases and other land uses	5,406,756	6,800,000	+400,000(8)	7,200,000
(7) Forest fire protection	15,577,095	20,390,000	+1,400,000(9)	21,790,000

(Continued on next page)

Project	1961	1962 (estimated)	Increase or decrease	1963 (estimated)
(8) Structural improvements for fire and general purposes (construction and maintenance)	10,839,278	11,781,000	+359,000(10)	12,140,000
(9) Rehabilitation of burns	1,242,596	1,050,000	- -	1,050,000
Subtotal	84,921,312	113,691,000	+11,499,000	125,190,000
Deduct amount advanced from "Cooperative range improvements"	-700,000	-700,000	- -	-700,000
Subtotal, National forest protection and management	84,221,312	112,991,000	+11,499,000	124,490,000
b. Fighting forest fires	39,530,024	5,000,000	- -	5,000,000
c. Insect & disease control				
(1) White pine blister rust control	3,244,970 a/	3,365,000	+100,000(11)	a/ 3,465,000
(2) Other pest control	4,115,463 b/	5,985,000	+1,300,000(12)	b/ 7,285,000
Subtotal, Insect and disease control	7,360,433	9,350,000	+1,400,000	10,750,000
d. Acquisition of lands (Weeks Act)	99,508	300,000	+200,000(13)	500,000
Subtotal	131,211,277	127,641,000	+13,099,000	140,740,000
Deduct amount advanced from "Expenses, brush disposal" for fighting forest fires	-2,838,024	- -	- -	- -
Total, Forest Land Management	128,373,253	127,641,000	+13,099,000	140,740,000
2. Forest Research:				
a. Forest and range management research	8,683,625	9,737,000	+477,000(14)	10,214,000
b. Forest protection research:				
(1) Forest fire research	1,018,020	1,349,000	+130,000(15)	1,479,000
(2) Forest insect research	1,135,088	1,590,000	+135,000(16)	1,725,000
(3) Forest disease research	1,007,753	1,405,000	+120,000(17)	1,525,000
Subtotal, Forest protection research	3,160,861	4,344,000	+385,000	4,729,000
c. Forest products and engineering research	3,420,408	4,477,000	+240,000(18)	4,717,000
d. Forest resources research:				
(1) Forest survey	1,519,259	1,583,000	- -	1,583,000
(2) Economics research	644,152	1,032,000	+125,000(19)	1,157,000
Subtotal, Forest resources research	2,163,411	2,615,000	+125,000	2,740,000
e. Forest research construction	1,238,386	5,195,000	-4,445,000(20)	750,000
Total, Forest Research	18,666,691	26,368,000	-3,218,000	23,150,000

Project	1961	1962 (estimated)	Increase or decrease	1963 (estimated)
3. State and Private Forestry Cooperation:				
a. Cooperation in forest fire control	10,134,523	12,465,500	- -	12,465,500
b. Cooperation in forest tree planting	293,863	296,000	- -	296,000
c. Cooperation in forest management and processing	1,548,500	2,500,000	- -	2,500,000
d. General forestry assistance	406,769	538,500	- -	538,500
Total, State and Private Forestry Cooperation	12,383,655	15,800,000	- -	15,800,000
Total, Forest Protection and Utilization c/	159,423,599	169,809,000	+9,881,000	179,690,000
Unobligated balance lapsing	252,901	- -	- -	- -
Total available or estimate	159,676,500	169,809,000	+9,881,000	179,690,000
Transferred to "Operating Expenses, Public Buildings Service," General Services Administration	- -	359,000		
Total appropriation or estimate	159,676,500	170,168,000		

a/ Includes allocations to the Dept. of the Interior: 1962, $368,700; 1963, $353,000.
b/ Includes allocations to the Dept. of the Interior: 1962, $347,500; 1963, $400,000.
c/ Represents obligations. Applied costs for 1961 are $156,979,513. The difference of $2,444,086 reflects, primarily, contracts made and orders placed in 1961 over contractual services and equipment used in that year.

INCREASES AND DECREASES

The net increase of $9,881,000 in the Forest Protection and Utilization appropriation is distributed as follows:

Development Program for the National Forests	+$13,099,000
National Forestry Research Program	-3,218,000
Total	9,881,000

This net increase, together with the increase of $2,500,000 shown in the appropriation Forest Roads and Trails, and the increase of $1,750,000 in the appropriation Acquisition of Lands for Superior National Forest is needed for the orderly fulfillment of the Development Program for the National Forests and the National Forestry Research Program. The original Program for the National Forests, as submitted to the Congress in March, 1959, has been revised so as to provide for major needs where these were not previously recognized in full and where subsequent surveys and trends have indicated a higher level of need. Cost estimates based upon 1958 dollars have been adjusted to 1961 operating and development costs. The need for this revision was made

clear in President Kennedy's Special Message on Natural Resources of February 23, 1961 and the President's March 16, 1961 Agriculture Message to Congress. the revised program for Development of the National Forests was submitted to the Congress by the President on September 21, 1961

In order to more clearly and adequately present this program, the revision has been developed in two parts:

1. The Development Program for the National Forests

   The development program includes all the renewable resources of the National Forest System--water, timber, recreation, forage, and wildlife habitat. The program provides for the continued orderly use and development of the renewable resources of the National Forests and National Grasslands in accordance with the basic conservation principles under the "Multiple Use-Sustained Yield Act" of June 12, 1960 (Public Law 86-517). The accomplishments under this program over the next ten years will largely determine whether those vastly important public lands will contribute by the year 2000 their fair share to a greatly expanded national economy and public need.

2. A National Forestry Research Program

   This program includes the research needed to adequately support forestry activities, whether on National Forests and other public lands or on private lands, including especially the farms and other small private woodlands. This program covers all the research for which the Forest Service has responsibility. It embraces most aspects of all major problems of forests and associated range lands. It does not include the related research that is the assigned responsibility of other Federal agencies.

Fiscal year 1962 appropriations recognized the urgent need for this accelerated program by providing obligational authority to a level of 97.1 percent of that planned for the year. However, cumulative through 1962, total implementation has been approximately $2.74 million behind schedule. This is primarily due to the fact that the Federal Highway Act authorization of $35 million for fiscal year 1962 and $40 million for fiscal year 1963 did not permit acceleration of the Forest Roads and Trails financing to the level needed to meet the needs as recognized in the Program for the National Forests. The fiscal year 1963 authorization would have to be amended from $40 million to $50 million to bring this activity reasonably near the level of financing necessary to keep pace with the needs of the program.

The following exhibits reflect (1) the status of the program through 1962, (2) a comparison of the 1962 planned and financed levels, and (3) a comparative table showing the distribution by program activities of:

a. Maximum annual level of $320.6 million as reflected in the original plan. This level was planned to be reached in 5 years (fiscal year 1965);

b. Maximum annual level of $561.1 million as reflected in the revised plans. This level of financing is planned to be reached in 10 years (1972);

c. Level of financing proposed for fiscal year 1963;

d. Amount remaining to be implemented in subsequent years.

STATUS OF IMPLEMENTATION OF NATIONAL FOREST PROGRAM - 1962

EXHIBIT 1

	Forest Land Management					Road Program				
	Nat. Forest Protection and Management	Insect and Disease Control	Weeks Act Acquisition	Total	Forest Research	Roads and Trails	Access Roads	Total	Special Acquisition	Total National Forest Program
1960 N.F. Plan Base	$67,534,000	$4,000,000	$100,000	$71,634,000	$7,013,200	$35,400,000		$35,400,000	$60,000	$114,107,200
Level of Financing	70,534,000	5,000,000	100,000	75,634,000	7,513,200	39,860,000	$1,000,000	40,860,000	60,000	124,067,200
Advance implementation	3,000,000	1,000,000	- -	4,000,000	500,000	4,460,000	1,000,000	5,460,000	- -	9,960,000
1961 Proposed Level, First Year	88,284,000	5,500,000	100,000	93,884,000	13,513,200	47,000,000		47,000,000	1,010,000	155,407,200
Level of Financing	85,337,900	5,370,000	100,000	90,807,900	11,745,800	44,170,000	1,000,000	45,170,000	760,000	148,483,700
Difference	-2,946,100	-130,000	- -	-3,076,100	-1,767,400	-2,830,000	+1,000,000	-1,830,000	-250,000	-6,923,500
1962 Proposed Level, Second Year	114,597,200	6,000,000	100,000	120,697,200	18,800,000	56,700,000		56,700,000	510,000	196,707,200
Level of Financing	1/ 114,050,000	7,468,200	300,000	121,818,200	19,335,800	2/ 47,520,000	2,000,000	2/ 49,520,000	260,000	190,934,000
Difference	-547,200	+1,468,200	+200,000	+1,121,000	+535,800	-9,180,000	+2,000,000	-7,180,000	-250,000	-5,773,200
Cumulative Status 1960-1962	-493,300	+2,338,200	+200,000	+2,044,900	-731,600	-7,550,000	+4,000,000	-3,550,000	-500,000	-2,736,700

1/ Includes $359,000 transferred to General Services Administration for space rental.

2/ Includes Forest Roads and Trails appropriation $35,000,000
Advance of F.Y. 1963 Federal Highway Act contract authorization ..... 2,500,000 (unfunded)
Roads and Trails for States (10%) 10,020,000
47,520,000

EXHIBIT 2

FINANCING OF NATIONAL FOREST PROGRAM -- F.Y. 1962

	Planned level	Financed level	Difference	Percent financed
FOREST LAND MANAGEMENT:				
National Forest Protection and Management:				
Timber resource management:				
(a) Sales administration and management	$21,541,000	$22,780,000	$1,239,000	105.8
(b) Reforestation and stand improvement	13,945,200	12,750,000	-1,195,200	91.4
Subtotal, Timber resource management	35,486,200	35,530,000	43,800	100.1
Recreation-public use	20,647,000	20,500,000	-147,000	99.3
Wildlife habitat management	3,632,000	3,220,000	-412,000	88.7
Range resource management:				
(a) Management	4,671,000	4,610,000	-61,000	98.7
(b) Revegetation	2,453,000	2,540,000	87,000	103.6
(c) Improvements	3,403,000	3,180,000	-223,000	93.4
Subtotal, Range resource management	10,527,000	10,330,000	-197,000	98.1
Soil and water management	4,584,000	4,090,000	-494,000	89.2
Mineral claims, leases, and other land uses	7,031,000	6,800,000	-231,000	96.7
Forest fire protection	19,343,000	20,390,000	1,047,000	105.4
Structural improvements for fire and general purposes	13,347,000	12,140,000	-1,207,000	91.0
Rehabilitation of burns	- -	1,050,000	1,050,000	- -
Total, National forest protection and management	114,597,200	114,050,000	-547,200	99.5
Insect and Disease Control:				
White pine blister rust control	3,253,700	3,365,000		
Less private land excluded in plan base	-1,153,700	-1,153,700		
	2,100,000	2,211,300	111,300	105.3
Other pest control	4,628,100	5,985,000		
Less private land excluded in plan base	-728,100	-728,100		
	3,900,000	5,256,900	1,356,900	134.8
Total, Insect and disease control	6,000,000	7,468,200	1,468,200	124.5
Acquisition of Lands, Weeks Act	100,000	300,000	200,000	300.0
Total, Forest Land Management	120,697,200	121,818,200	1,121,000	100.9
FOREST RESEARCH:				
Forest and range management research	10,495,600	9,737,000		
Less amounts not included in N.F. plan	-3,440,000	-3,440,000		
	7,055,600	6,297,000	-758,600	89.2
Forest protection research:				
Forest fire research	1,459,400	1,349,000		
Less amounts not included in N.F. plan	-271,500	-271,500		
	1,187,900	1,077,500	-110,400	90.7
Forest insect research	1,558,400	1,590,000		
Less amounts not included in N.F. plan	-316,500	-316,500		
	1,241,900	1,273,500	31,600	102.5
Forest disease research	1,122,200	1,405,000		
Less amounts not included in N.F. plan	-256,000	-256,000		
	866,200	1,149,000	282,800	132.6
Subtotal, Forest protection research	3,296,000	3,500,000	204,000	106.2
Forest products utilization research	4,879,700	4,477,000		
Less amounts not included in N.F. plan	-1,416,200	-1,416,200		
	3,463,500	3,060,800	-402,700	88.4
Forest resources research:				
Forest survey	1,519,000	1,583,000		
Less amounts not included in N.F. plan	-1,050,000	-1,050,000		
	469,000	533,000	64,000	113.6
Economics research	997,900	1,032,000		
Less amounts not included in N.F. plan	-282,000	-282,000		
	715,900	750,000	34,100	104.8
Subtotal, Forest resources research	1,184,900	1,283,000	98,100	108.3
Forest research construction	3,800,000	5,195,000	1,395,000	136.7
Total, Forest Research	18,800,000	19,335,800	535,800	102.8
Roads and Trails	56,700,000	1/ 47,520,000	-9,180,000	
Access Roads	- -	2,000,000	2,000,000	
Total, Road and Trail program	56,700,000	1/ 49,520,000	-7,180,000	87.3
Acquisition of Lands, Special Acts	10,000	10,000	- -	100.0
Acquisition of Lands, Superior National Forest	500,000	250,000	-250,000	50.0
Total, Special acquisition	510,000	260,000	-250,000	51.0
Total, National Forest Program, Fiscal Year 1962	196,707,200	190,934,000	-5,773,200	97.1

1/ Includes $2,500,000 advance of the F.Y. 1963 contract authorization (unfunded) as provided in the Federal Highway Act of 1960.

(The following table shows the relationship between the maximum annual level of financing proposed in the Program for the National Forests and the maximum annual level of financing proposed in the revised programs. It also reflects the relationship of the amounts proposed for 1963 and the amount remaining to be implemented in subsequent years. In developing the Program for the National Forests, research work relating to non-national forest lands was excluded from the plan. The revised plan combines forestry research for both national forest and non-national forest lands to more adequately present the entire forestry research need. The adjustment shown in Column 2 below adds back the portion of the financing considered as being applicable to non-national forest lands in the original program to provide a common comparative cost base between the original program--Column 3--and the programs as revised--Column 4.)

Appropriation Item	Maximum annual level proposed in original N. F. Program (5 years)	Adjust for non-national forest land research not included in N. F. Program	Maximum annual level adjusted comparable to proposed levels of revised programs	Maximum annual level proposed for revised programs (1972)	Proposed level of financing 1963	Amount remaining to be implemented in subsequent years Col. (4) minus Col. (5)
	(1)	(2)	(3)	(4)	(5)	(6)
FOREST PROTECTION AND UTILIZATION:						
FOREST LAND MANAGEMENT:						
National Forest Protection and Management:						
Timber resource management:						
(a) Sales administration and management	$26,919,000:		$26,919,000:	$41,229,000:	$23,180,000:	$18,049,000
(b) Reforestation and stand improvement	41,119,000:		41,119,000:	49,307,000:	15,250,000:	34,057,000
Recreation-public use	31,065,000:		31,065,000:	96,380,000:	26,120,000:	70,260,000
Wildlife habitat management	7,333,000:		7,333,000:	7,989,000:	3,420,000:	4,569,000
Range resource management:						
(a) Management	7,365,000:		7,365,000:	7,477,000:	4,710,000:	2,767,000
(b) Revegetation	3,683,000:		3,683,000:	3,315,000:	2,660,000:	655,000
(c) Improvements	5,400,000:		5,400,000:	5,121,000:	3,180,000:	1,941,000
Soil and water management	11,106,000:		11,106,000:	11,854,000:	4,490,000:	7,364,000
Mineral claims, leases, and other land uses	11,715,000:		11,715,000:	13,661,000:	7,200,000:	6,461,000
Forest fire protection	28,855,000:		28,855,000:	41,250,000:	21,790,000:	19,460,000
Structural improvements for fire and general purposes (construction and maintenance)	18,630,000:		18,630,000:	19,572,000:	12,140,000:	7,432,000
Rehabilitation of burns	- -		- -	1,050,000:	1,050,000:	- -
Subtotal, National Forest Protection & Management	193,190,000:		193,190,000:	298,205,000:	1/ 125,190,000:	173,015,000
Insect and Disease Control:						
White pine blister rust control	2,500,000:		2,500,000:	2,842,000:	2,438,000:	404,000
Other pest control	6,500,000:		6,500,000:	7,508,000:	6,112,000:	1,396,000
Subtotal, Insect and Disease Control	9,000,000:		9,000,000:	10,350,000:	2/ 8,550,000:	1,800,000
Acquisition of Lands (Weeks Act)	100,000:		100,000:	8,125,000:	500,000:	7,625,000
Total, Forest Land Management	202,290,000:		202,290,000:	316,680,000:	134,240,000:	182,440,000
FOREST RESEARCH:						
Forest and range management research	13,835,000:	$3,440,000:	17,275,000:	33,705,000:	10,214,000:	23,491,000
Forest protection research:						
Forest fire research	2,200,000:	271,500:	2,471,500:	5,190,000:	1,479,000:	3,711,000
Forest insect research	2,208,000:	316,500:	2,524,500:	7,125,000:	1,725,000:	5,400,000
Forest disease research	1,440,000:	256,000:	1,696,000:	5,925,000:	1,525,000:	4,400,000
Subtotal, Forest protection research	5,848,000:	844,000:	6,692,000:	18,240,000:	4,729,000:	13,511,000
Forest products and engineering research	7,338,000:	1,397,200:	8,735,200:	19,210,000:	4,717,000:	14,493,000
Forest resources research:						
Forest survey	469,000:	1,050,000:	1,519,000:	2,560,000:	1,583,000:	977,000
Marketing and economics research	1,850,000:	282,000:	2,132,000:	6,285,000:	1,157,000:	5,128,000
Subtotal, Forest resources research	2,319,000:	1,332,000:	3,651,000:	8,845,000:	2,740,000:	6,105,000
Subtotal, Research Program	29,340,000:	7,013,200:	36,353,200:	80,000,000:	22,400,000:	57,600,000
Forest research construction	3,960,000:	- -	3,960,000:	- -	750,000:	-750,000
Total, Forest Research	33,300,000:	7,013,200:	40,313,200:	80,000,000:	23,150,000:	56,850,000
TOTAL, FOREST PROTECTION AND UTILIZATION	235,590,000:	7,013,200:	242,603,200:	396,680,000:	157,390,000:	239,290,000
FOREST ROADS AND TRAILS, including "Roads and Trails for States" (10%)	85,000,000:		85,000,000:	164,370,000:	3/ 49,100,000:	115,270,000
ACCESS ROADS					2,000,000:	-2,000,000
Total Road Program	85,000,000:		85,000,000:	164,370,000:	3/ 51,100,000:	113,270,000
ACQUISITION OF LANDS FOR NATIONAL FORESTS, SPECIAL ACTS	10,000:		10,000:	10,000:	10,000:	- -
ACQUISITION OF LANDS FOR SUPERIOR NATIONAL FOREST					2,000,000:	-2,000,000
TOTAL INCLUDED IN PROGRAMS	320,600,000:	7,013,200:	327,613,200:	561,060,000:	210,500,000:	350,560,000
Reconciliation to the 1963 Budget Estimates:						
Insect and disease control on lands not administered by the Forest Service					+2,200,000:	
State and private forestry cooperation					+15,800,000:	
Assistance to States for tree planting					+1,000,000:	
Amount for Fighting Forest Fires not included in the program because of the emergency nature of this fund					+5,000,000:	
Less 10% of national forest receipts included in program but not in regularly appropriated funds					-11,600,000:	
TOTAL BUDGET ESTIMATE (appropriated funds)					222,900,000:	

1/ Includes $700,000 transferred from "Cooperative Range Improvements."
2/ Excludes $2,200,000 as explained in reconciliation at bottom of table.
3/ Does not include proposed amendment to increase the 1963 Federal Highway Act authorization by $10,000,000 of which $6,500,000 would be funded.

FOREST LAND MANAGEMENT

(1) An increase of $400,000 in timber sale administration and management would be used to increase the timber cut by 200 million board feet to a total of 9.7 billion board feet. This increased cut would be in special small and salvage sales. Further expansion of these sales to utilize material which otherwise will be lost by decay and to provide economic opportunities for small operators, particularly in rural redevelopment areas, is clearly advisable.

Following is a summary of the total program proposed for fiscal year 1963:

Regular Sales		
Sale preparation:	11.1 billion board feet at $0.51 per M	$5,661,000
Sale administration:	9.0 billion board feet at $1.49 per M	13,437,000
Advance sale preparation:	3.0 billion board feet at $0.23 per M	690,000
Special small and salvage sales		
(Sell and cut 700 million board feet)		1,572,000
Timber inventories and management plans		1,820,000
Total		23,180,000

(2) An increase of $2,500,000 for reforestation and stand improvement would be used to implement the Development Program for the National Forests by increasing rate of reforesting non-stocked and poorly stocked land and expanding badly needed cultural operations such as weeding, thinning and release of young timber stands. Some of the increase is needed to develop nurseries to produce trees that must be available for the larger tree planting program.

The planned use of the proposed increase is:

Plant and seed to reforest an estimated 20,000 acres, including cost of trees and seed	$1,000,000
Release suppressed natural reproduction and planted stands from brush and worthless trees to increase growth on an estimated 43,000 acres	650,000
Thin young natural stands to increase growth on an estimated 28,500 acres	850,000

(3) An increase of $5,620,000 for recreation-public use would be used to accelerate the rehabilitation of worn-out campground and picnic facilities; to provide for sanitation, cleanup and maintenance of newly constructed areas and facilities; and to develop new sites to alleviate overcrowding and to properly meet expanding use (1960 use was 13% over 1959; additional increased use of 10% or more is indicated for 1961).

The rehabilitation program would be stepped up to accomplish the rehabilitation of 140 swimming, winter-sports, organization and other sites; and to perform major repair work on 24 recreation dams and reservoirs. Approximately $2,500,000 of the increase would be used for this rehabilitation program.

The expansion of existing recreation sites and development of new ones would provide 1,500 additional family camp and picnic units, accommodating 7,700 persons at one time, and about 1.3 million visits per season. Approximately $1,600,000 of the increase would be used for this purpose.

Due to increasing demands, additional emphasis is being placed on the development and administration of outstanding recreation sites such as Flaming Gorge, Madison River Earthquake Site, Mendenhall and Portage Glaciers, Shasta and Trinity Reservoirs, Current and Eleven Point Rivers and Cumberland Reservoirs. Ten additional special areas and other important areas will be developed. At such sites there is need for more public services which are not measurable in terms of family units, such as an interpretive program, boat landings, bathhouses, overlooks, visitor centers, etc.

Increased recreation use and facilities accentuate the need for the preparation of management plans to coordinate overall multiple use planning and development of the National Forests. Forty National Forest recreation management plans and 2,000 campground, picnic and other site plans needed in advance of the development program will be prepared in 1963.

Visitor Information Service would be expanded to include developments at some 50 sites where there is a concentrated demand for special facilities and services to enable the public to enjoy and understand the resources of the national forests. Museums, exhibits, nature trails, and information signs would be developed to help the public understand the local history and the management of national forest resources.

(4) An increase of $200,000 for wildlife habitat management would be used to maintain and improve wildlife conditions on the national forests and national grasslands through direct habitat improvement projects.

Projects toward which these funds would be applied include permanent wildlife openings, 250 acres; prescribed burns, 20,000 acres; revegetation of key wildlife areas, 2,500 acres; aquatic plant control, 250 acres; small water developments, 100 units; fencing key game areas and stream bottoms, 3,000 acres; stream improvement, 30 miles.

(5) An increase of $100,000 in range resource management would be used to meet the increasing demands for more intensive management on the more than 11,000 national forest, national grassland and other grazing allotments administered by the Forest Service. This would advance the rate of completion of range allotment analysis, re-analysis, and maintenance of management plans. Intensification of management of the range resource in coordination with other resources demands frequent reassessment of changing range resource conditions, incorporation of new findings into management plans, and implementation of these plans if the Forest Service is to adequately carry out its range management responsibilities.

(6) An increase of $120,000 for range revegetation would be used for revegetation of an estimated 12,000 acres of depleted national forest rangelands, either by reseeding of desirable grasses, eliminating undesirable brush, or a combination of both. This increase would accelerate the restoration of rangelands for good forage production and improved watershed conditions.

(7) An increase of $400,000 for soil and water management would be used to improve technical standards and criteria for protecting, restoring and

enhancing watershed conditions and applying them in watersheds on which activities such as road construction, timber harvesting, mining, recreation area development, and others are taking place to insure appropriate consideration of resource management and protection measures in multi-purpose water development programs; for installation of water yield inventory facilities needed for administrative purposes on selected key watersheds; and to develop soil management interpretations essential to maximum use of soil survey data in ranger district multiple use management.

(8) An increase of $400,000 for mineral claims, leases and other land uses. This item covers three major land administration activites, each of which is handled as an identifiable program, and each of which is an essential part of a balanced program. The three activities are (a) mineral claims, leases and special uses; (b) land classification and ownership adjustments; (c) land surveys and mapping. The increase would be used as follows:

(a) $200,000 to accelerate action on mineral claims, leases, and special uses. Additional personnel would be assigned to conduct the necessary supervision and field work required to insure adequate protection of Government-owned land and resources. Specifically involved are:

Supervision of the issuance and operation of mineral leases on acquired and public-domain lands administered by the Forest Service. Such leases now cover over 10 million acres and receipts credited to the national forest system were over $1,000,000 in fiscal year 1961. In addition, an estimated $8,000,000 is collected by the Bureau of Land Management for leases on public lands administered by the Forest Service. It is essential that careful thought be given to multiple-use land management before mineral leases are issued, to the protection of surface resources during the mining operation and to the rehabilitation of lands after completion of mining. The Forest Service issues and administers leases for common varieties of mineral materials on all lands under its jurisdiction. It acts as advisor and gives consent to leases for minerals, oil, and gas on acquired lands, and advises the Bureau of Land Management as to stipulations in leases on public-domain lands administered by the Forest Service. This work usually requires extensive field investigation and negotiations with applicants regarding stipulations necessary to protect government-owned land and resources.

Status records showing the mineral ownership of some 20 million acres of acquired lands. Some of these minerals are very valuable and it is necessary to have accurate ownership records so that the property of the United States and the minerals owned by the United States may be fully protected. This work requires careful and time-consuming search of title records. It may also involve litigation. A record system to serve these purposes has been devised and is being tested. This system would be implemented in 1963.

Supervision of operations of privately-owned mineral rights on lands where the United States owns the surface. Millions of acres of acquired lands are involved and it is frequently necessary that the surface rights of the United States be protected from mineral operations of the owner of the minerals. This involves unauthorized activities and unauthorized damage to land and resources.

(b) $90,000 for land classification and ownership adjustments as follows:

$42,000 for expanding and accelerating the program of land exchange and land ownership adjustments to consolidate and adjust the National Forest ownership pattern for more efficient and economical administration. The expanding population growth and changing economic conditions have intensified the need for adjustments in National Forest ownership. Much of the needed change can be accomplished through land exchanges which are mutually beneficial to the United States and the exchange proponents. The number of exchange proposals increases each year with the present annual level approximating 300 actionable cases. The 10-year objective in the National Forest development program is to convey 1,500,000 acres of Federal lands in National Forests and National Grasslands in exchange for suitable lands now in private or other ownership to consolidate and improve the pattern of Government ownership. Current exchange accomplishments must be stepped-up to meet the objective.

$26,000 for land classification. Land uses change as do economic conditions and numbers of people in related areas. These factors require that the Forest Service give close and continuing study to the problems relating to defining areas that might better serve the needs of the Nation if excluded from or included in the National Forest and National Grasslands systems. A small staff of specialists has been set up at regional office and forest levels to begin to meet this problem. The increase in this activity would provide for needed additional staffing at field locations where local adjustment problems are particularly acute and complex, and where policy decisions must be made in the very near future.

$22,000 for land status records. Existing landownership and status records are inadequate to meet the needs of Forest Service land managers in planning for expanding resource development and use in protecting the interests of the United States in the land it owns and administers. A revised records system adequate to meet the need for readily available, complete and accurate information has been developed and field tested. This system will now be applied service-wide. The increased funds in this activity would hasten the time when this badly needed system will be fully effective.

(c) $110,000 for land surveys and mapping as follows:

The land line location program of the Forest Service would be accelerated. The stepped-up program of land line location initiated in fiscal year 1958 has as its basic purposes the search for, proper identification and permanent marking of property and other land line courses. Increased land values, intensified land use, pressures for land and other ownership factors make it imperative that this work be speeded up. The 10-year objective is to establish and mark property corners and survey and post some 200,000 miles of property lines between National Forest and other lands which are now inadequately located and marked. The increase in this activity is necessary to continue orderly progress toward the level of accomplishment that is needed to meet this objective.

The program to procure large scale topographic maps of National Forest and National Grassland areas would be expanded and accelerated. Multiple use plans are essential management requirements in the intensified use of resources of lands under the administration of the Forest Service. Topographic maps are required as a base for the preparation of these plans, and to provide

elevational data essential to design of engineering projects and execution of management plans. Adequate maps are presently available for only approximately 35 percent of the areas under the administration of the Forest Service. The 10-year objective in the National Forest development program is to obtain large scale topographic maps for an area of approximately 355,600 square miles for which coverage is either non-existent or unreliable. The present rate of topographic mapping on National Forests and National Grasslands will not meet this objective.

(9) An increase of $1,400,000 for forest fire protection would be used to further strengthen the fire control force to better meet critical fire situations particularly in western States. An amount of $28,728 is included in this item for reimbursing the Employees' Compensation Fund, Department of Labor, for benefit payments made from that fund to employees of the Forest Service who were injured while in the performance of duty subsequent to December 1, 1960. Such reimbursement is required pursuant to provisions of Public Law 86-767 enacted September 13, 1960.

Severe drought conditions and the occurrence of a larger number of fires during the past three years have caused high fire fighting costs and large losses of valuable resources. Emphasis will be on increasing the striking power of crews to stop fires while small and on building up the fire prevention effort to reduce the number of man-caused fires. More small crews, including some with helicopter transportation, will be provided in an effort to assure initial fast coverage of fires. There will also be provided more large, well-equipped and trained crews at central locations to back up initial attack when the first crews are unable to stop fires. New equipment will be provided and work will be carried on to improve and modify equipment design. The current small-scale fuel cleanup and treatment program will be expanded to new areas to test and demonstrate possibilities of making extensive changes in fuel conditions as a means of stopping conflagration fires.

Following is a distribution of this proposed increase:

Initial attack	$650,000
Reinforcement crews	250,000
Prevention	350,000
Fuel treatment	150,000
Total	1,400,000

(a) Initial attack $650,000

The experiences of three severe forest fire seasons in western States have demonstrated the need for further increased striking force of capable fire crews to attack fires while small. Well-trained crews strategically located have been effective in keeping most fires to small size with consequent low loss of resource. Increases planned for fiscal year 1963 provide more small crews in areas where likelihood of fires is greatest and fuel and weather conditions cause fires to spread rapidly. Many of these will have helicopter transportation to enable them to reach a larger area more quickly. One to three men will be added to many existing crews where strength is insufficient to meet needed attach strength. Seasons will be lengthened for some crews and for individual positions to better meet fire season requirements.

(b) Reinforcement crews $250,000

Large reinforcement crews specially prepared for the most difficult fire fighting jobs were used in the emergency fire program of 1960 and again in 1961. As backup crews for initial attack units which could not control their fires on initial attack, these crews proved their value many times. The 1961 crews were on fire duty nearly continuously in July and August and handled the most difficult parts of fires under severe burning and working conditions. Five more such crews are planned for Utah, California, Idaho, Oregon, and Colorado. They will be centrally located for use over a wide area. The high standards of selecting, equipping, and training the men will be continued.

(c) Fire prevention $350,000

An average of 4,454 man-caused fires have occurred on Forest Service protected lands during the past five years. Many of these fires could have been prevented by an expanded prevention effort. Needed to provide an expanded prevention effort are:

1. Extend the period of employment for prevention specialists.

   Some seasonal employees would be used yearlong and the employment period of others would be extended so as to provide more effective contact with residents and forest visitors and to work on particularly difficult fire occurrence situations.

2. Intensify prevention training.

   Better techniques will make each prevention employee more effective. This training is to include thorough knowledge of fire laws and training in law enforcement approaches in dealing with the public.

3. Employ additional prevention personnel to intensify the effort on specific problems.

   Some problems require special attention which they are not now receiving. For example, the incendiary fire problem in some southern States; debris burning, especially by rural residents; and fires in connection with logging and lumbering operations where better inspection service should help reduce fires caused by defective equipment.

To cope with the expanded prevention effort needed, it is proposed to add to the personnel assigned to fire prevention.

(d) Fuel treatment $150,000

Experience has shown that the spread of a number of large, costly, and damaging fires can be directly attributed to large concentrations of fuels such as snags, brush, slash, or other debris. A program of cleanup is needed in some areas to fireproof roadside strips and other areas to prevent fires from starting and to make it possible to control more fires at small size.

This is a costly undertaking. More work is needed to determine costs and to provide areas which have been treated for this purpose as a basis of assessing effectiveness of treatment under operating conditions. A fuel treatment program is underway in California. This should be expanded to additional areas and other fuel types where fire potential is high. Treatment will consist of fuel reduction, fire barriers, water facilities, and helicopter spots on these trial areas.

(10) An increase of $359,000 in structural improvements for fire and general purposes would be used for construction of improvements to maintain balance with the increased national forest activities. Approximately $179,000 of this increase will be needed to reimburse the General Services Administration for leasing new office space for expanding Forest Service program activities at locations where the General Services Administration does not have available space facilities and would have to contract for the additional space. Construction funds would be used to construct housing units plus urgently needed service buildings, related improvements, communication systems, new buildings to house the Arcadia Equipment Development Center, a smokejumper base at Redmond, Oregon, and construction of airports and heliports which are highly essential to the fire control program and multiple use management of the national forests.

An increase of $1,400,000 for insect and disease control would be used to strengthen two phases of the Forest Pest Control program as follows:

White Pine Blister Rust Control	$100,000
Other Pest Control	1,300,000
Total	1,400,000

(11) White Pine Blister Rust Control

The recently developed use of antibiotic fungicides for control of blister rust on western white pine makes possible an increase in the scope of the control program with favorable cost benefit ratios in northern Idaho, western Montana, and eastern Washington. With ribes eradication as the only control measure, protection activities were limited to about one million acres of young stands in these States. Use of antibiotic fungicides now makes possible the rehabilitation of heavily infected stands over 20 years of age on an additional 1,500,000 acres without any ribes eradication treatment. The increase of $100,000 would be used to start rehabilitation work in western white pine stands now being destroyed by blister rust.

(12) Other Pest Control

Surveys completed in the fall of 1961 reveal serious uptrends in forest insect populations, particularly bark beetles, that are causing widespread damage to forest resources. In the West, mountain pine beetle, Engelmann spruce beetle, western pine beetle, and Ips outbreaks have "exploded" on national forests, Department of the Interior lands, and non-Federal lands in California, Colorado, Montana, New Mexico, Utah, and Wyoming. In the South, outbreaks of the southern pine beetle are severe on Federal and non-Federal lands in Alabama, Mississippi, North Carolina, South Carolina, and Texas. These outbreaks have been favored by prolonged drought periods, large forest fires, unusually mild winters, blowdowns, storms, and variations in the effectiveness of natural checks of parasites, predators, and diseases.

Projects to control many of these outbreaks are underway. Due to the limited availability of funds, it has been necessary to defer a great amount of control treatment from 1962 to 1963. However, if such control is not accomplished in 1963, ultimate control costs will be greater and timber resource losses will be extremely severe with corresponding detrimental effects on other important forest resources such as recreation values. The resulting areas of dead timber would materially increase the fire hazard with corresponding increased fire suppression cost potential in these areas. Increased efforts on going projects, previously deferred projects, and newly discovered outbreaks will be necessary if severe losses are to be averted.

This increase of $1,300,000 would be used primarily on bark beetle control projects in western and southern States and for budworm control that could not be accomplished in 1962. A detailed breakdown of the 1963 program estimate is included in the Status of Program narrative for this item.

(13) An increase of $200,000 would be used to accelerate the program for acquisition of lands under the provisions of the Weeks Law (16 U.S.C. 513-519, 521). Further consolidation of land ownership within the National Forests, and transfer of certain critical areas to public ownership, are urgently needed to permit the most effective use of areas now in public ownership, to permit productive use of lands now largely unmanaged and to permit more efficient administration of existing National Forest lands. This program must be accelerated in order to facilitate National Forest management and development, and to restore the lands to be acquired to full forest productivity as soon as possible.

FOREST RESEARCH

(14) An increase of $477,000 in forest and range management research made up as follows:

(a) An increase of $137,000 for forest management research would be used to attack some of the most urgent timber growing problems that are in need of further research effort to guide expanding timber growing practices on the national forests and other forest lands. Included would be additional study of animal damage to forest trees in the Pacific Northwest and further development of methods to eliminate or reduce the damage; improvement of timber growing methods suitable for Alaska; better methods for establishment and management of tree plantations in Hawaii, Southwest, and Northeast; improved cultural methods for managing lodgepole and ponderosa pine in the Northwest; and strengthened genetics research aimed at improving pines and the development of superior races through controlled breeding.

(b) An increase of $135,000 for strengthening research on pressing watershed management problems including improvement of water yield and reduction of flood run-off in the Ozark-Ouachita uplands and southern Appalachians; managment of highly productive timbered watersheds of the west slope of the Sierra Nevada mountains in California; development of better techniques for restoring depleted and severely eroded forest and related rangeland and watersheds to good hydrologic condition in the Intermountain area of the West; and improvement of methods for reducing erosion and sedimentation in the coniferous forests of the Cascade Mountains.

(c) An increase of $75,000 in range management research would provide for additional study aimed at better management of pinyon-juniper and chaparral-covered ranges of the Southwest which have been converted to forage for improved water yield; for a more intensive attack on high priority problems of managing alpine sheep and cattle-ranges in Wyoming and Montana, and perennial bunch grass ranges of the eastern Sierras; and for improving methods of managing piney woods grazing in Florida.

(d) An increase of $50,000 in wildlife habitat management research would be used to find better methods for managing and improving deer and elk habitat in California and Oregon especially on forest ranges also used by domestic livestock; and to strengthen studies directed toward better deer habitat management in Texas and other parts of the South.

(e) An increase of $80,000 to intensify research on the most urgent problems of forest recreation including determination of ways to protect campgrounds from damage caused by heavy and concentrated use especially in the Northeast, Central States, and Lake States; to devise inexpensive and dependable ways to measure recreational use and the types of recreational facilities needed to handle large numbers of recreationists in the western United States; and to devise methods for assessing the recreational capacity of various types of forest enviroments such as lakes, streams, wilderness areas, and other special areas of high recreation potential in the West, prior to their development.

(15) An increase of $130,000 for forest fire research would be used to improve methods of preventing and controlling "run-away" fires that cause excessive losses and require large expenditures for control. Research would be intensified on finding what factors are involved in the evolution of lightning storms and how these storms might be modified to reduce lightning fires that are a serious problem in the West. Additional research would be done on preventing man-caused fires in California and in improving fire retardant chemicals and methods of aerial fire control, especially for western situations. Better techniques would be sought to guide the use of controlled fire to reduce critical fuel accumulations in the Northwest and southern Rocky Mountains.

(16) An increase of $135,000 for forest insect research would be used to further intensify research on the most troublesome forest insect pests including the development of methods of biological control in the Northwest through the use of predators, parasites, or diseases of the insects themselves; development of superior chemical formulations for direct control of pests that attack southern hardwoods and that destroy wood products; determination of the manner by which systemic chemicals (substances injected into or assimilated by trees) might be used as a cheaper and more effective insect control in the Central States and adjacent regions; and for exploration into methods for increasing effectiveness of control of forest insects by irradiation and chemo-sterilant techniques.

(17) An increase of $120,000 for forest disease research would give additional impetus to studies to reduce losses to commercial forests from root rots. Particular emphasis would be placed upon annosus root rot in the Southeast and on various soil-borne diseases in the Northwest. Efforts would be intensified to prevent or control diseases such as oak wilt and various cankers and blights that kill or seriously degrade valuable hardwoods in the East and South. Study of destructive rusts that attack western conifers would also be stepped up.

(18) An increase of $240,000 for forest products and engineering research would be used as follows:

(a) An increase of $200,000 for forest products utilization research would provide a more adequate basis for conducting the national program for the development of log and tree grades which will be used in establishing highest quality use for timber products. Critical field problems that prevent progress toward more complete utilization of wood in the Lake States and Northeast would receive more intensive study. Special attention would be given to development of knowledge and techniques leading to improved seasoning, conversion and processing of southern pine into a greater variety of more usable products. The proposed increase would also accelerate study of the specific gravity and other strength properties of important western conifers so that regional variations in strength characteristics can be identified. This information will guide the development of sound specifications for use of wood in structures and aid the marketing of lumber from timber, much of which is drawn from national forests. This is a cooperative program with the forest products industry handling much of the field work and the Forest Products Laboratory doing the laboratory phases of the study.

(b) An increase of $40,000 for forest engineering research would permit study of road design and ways to improve timber harvesting methods in steep terrain of the Rocky Mountains to preserve the soil and water resource. Study would be intensified in the use of helicopters as a possible method of log transport in inaccessible areas of the West or as a means to avoid watershed damage on unstable soils.

(19) An increase of $125,000 in forest resources research would be used as follows:

(a) An increase of $15,000 for forest economics research would strengthen the study of evaluation of multiple forest uses on critical watersheds in the Southwest, working toward methods to guide optimum resource management practices.

(b) An increase of $110,000 for marketing research would make possible expanded research in areas of severe underemployment and underdevelopment in the Appalachian Highland region and Lake States. Specific studies would include analysis of timber resources and markets to appraise potentials for industry expansion, design and testing of new and better ways of organizing timber harvesting and transportation operations from stump to market, and the development of new markets for little used elements of the timber resource.

(20) A decrease of $4,445,000 for forest research construction, as shown in the following tabulation. This program for fiscal year 1963 would be $750,000, to be used for providing auxiliary facilities and scientific equipment at the locations shown.

Location and Facility	1962 Estimate	Increase or Decrease	1963 Estimate
Riverside, California:			
Pacific Southwest forest fire control laboratory	$975,000	-$975,000	- -
Wenatchee, Washington:			
Forest soils and hydrology laboratory	300,000	-300,000	- -
Moscow, Idaho:			
White pine disease and silviculture laboratory	300,000	-300,000	- -
Bottineau, North Dakota:			
Plains shelterbelt laboratory	130,000	-130,000	- -
Fairbanks, Alaska:			
Forest research laboratory	350,000	-350,000	- -
St. Paul, Minnesota:			
Regional headquarters office and laboratories for Lake States Forest Experiment Station	1,250,000	-1,250,000	- -
Flagstaff, Arizona:			
Ponderosa pine silviculture laboratory	150,000	-150,000	- -
Bend, Oregon:			
Silviculture laboratory	150,000	-150,000	- -
Laramie, Wyoming:			
Range and watershed management laboratory	150,000	-150,000	- -
Bluefield-Princeton, West Virginia:			
Market development center, facilities and experimental forest	450,000	-450,000	- -
Athens, Georgia:			
Insect and disease, forest products studies, and silviculture laboratory	665,000	-665,000	- -

Location and Facility	1962 Estimate	Increase or Decrease	1963 Estimate
Bozeman, Montana: Forest and range management laboratory	175,000	-175,000	- -
West Thornton, New Hampshire: Laboratory facilities for watershed research	50,000	-50,000	- -
Grant Rapids, Minnesota: Greenhouse and headhouse	25,000	-25,000	- -
Gulfport, Mississippi: Insectary - $10,000; garage and storage - $10,000: experimental nursery - $5,000	25,000	-25,000	- -
Crossett, Arkansas: Loblolly pine silviculture laboratory	50,000	-50,000	- -
(a) Athens, Georgia: Equipment and auxiliary facilities for laboratory	- -	+250,000	$250,000
(b) Bluefield-Princeton, West Virginia: Timber products concentration yard, auxiliary facilities and equipment	- -	+150,000	150,000
(c) Corvallis, Oregon: Scientific equipment and auxiliary facilities	- -	+80,000	80,000
(d) Delaware, Ohio: Headhouse and greenhouses	- -	+64,000	64,000
(e) Olustee, Florida: Greenhouse, insectary, and scientific equipment	- -	+35,000	35,000
(f) Research Triangle, North Carolina: Scientific equipment and auxiliary facilities	- -	+126,000	126,000
(g) Stoneville, Mississippi: Scientific equipment	- -	+45,000	45,000
Total	5,195,000	-4,445,000	750,000

(a) Athens, Georgia
Scientific equipment for laboratory and auxiliary facilities $250,000

The research equipment and auxiliary facilities, including greenhouse, insectary, storage for inflammables, and other service buildings would make this laboratory, now under construction, fully effective. The program here includes studies of the silviculture of southern Piedmont hardwoods, including regeneration; control of insects such as hardwood borers and insects affecting nurseries and plantations; control of southern pine tree diseases such as annosus root rot, littleleaf, rusts of seeds, cones, nursery stock, and advance tree growth; studies of timber growth and quality relationships, and seasoning and other wood moisture problems. The auxiliary structures would be on Federally owned land on the campus of the University of Georgia.

(b) Bluefield-Princeton, West Virginia
Timber products concentration yard, auxiliary facilities and equipment 150,000

The development of timber products concentration yard, with the necessary equipment and facilities, would complete the marketing research facility under construction in fiscal year 1962. The research program here includes pilot plant studies of timber market development, beginning with research on timber harvesting methods, transportation, log handling, up-grading of low quality material by sorting and processing, and studies of improving marketing practices. Related research includes feasibility studies of new and expanded wood-using industries in areas of underemployment in the Appalachian Region. The facility and research equipment proposed would be on Federal land.

(c) Corvallis, Oregon
Scientific equipment and greenhouse 80,000

Modern scientific instruments and equipment and a headhouse-greenhouse are needed to round out the laboratory now nearing completion. They are especially important in the research on development of biological control methods of forest pests, particularly the western bark beetles which kill billions of board feet of timber each year in the West. Root rots and heart rots and their control are being studied in the disease research program. The equipment and facilities would make the present laboratory fully effective. The headhouse-greenhouse would be placed on land under long-term lease.

(d) Delaware, Ohio
Headhouse and greenhouses 64,000

These facilities are needed to fully implement the programs now under way at this laboratory. Research would benefit from these greenhouses which are necessary to controlled experiments involving the use of plant materials year round. The research program here is aimed at control of insects and diseases that kill trees, degrade timber crops, and retard growth of the Central States forests. Emphasis is given to pest control in coniferous

plantations through the use of biological control methods. Research on Dutch elm disease and oak wilt is centered here. These supplementary research facilities would be adjacent to the laboratory which is on Federally owned land.

(e) Olustee, Florida
Greenhouse, insectary, scientific equipment 35,000

The greenhouse, insectary, and scientific equipment would provide specialized facilities needed to make the program fully effective. This includes study of genetic improvement of southern pine for oleoresin production, production and protection of cones and seeds of pines from insect and disease pests, especially in seed orchards, and factors responsible for the survival and rapid growth of planted pine seedlings. The facilities would be an integral part of the present laboratory at Olustee, on Federally owned land.

(f) Research Triangle, (Durham-Raleigh) North Carolina
Scientific equipment and auxiliary facilities 126,000

Scientific equipment, insectary, and headhouse-greenhouse combination are the specialized facilities needed to make the program at this laboratory fully effective. The laboratory is nearing completion. Research here emphasizes the study of forest insect and disease problems, and factors affecting forest growth in the southern and eastern States. The laboratory building is on Federally owned land.

(g) Stoneville, Mississippi
Scientific equipment 45,000

The scientific equipment would make the present laboratory constructed with fiscal year 1961 funds fully effective. The program at Stoneville includes studies of management, protection, and improvement of bottomland hardwoods, correlation of soil characteristics with growth of timber species to furnish guides for cultural practices, and on improving the utilization of important bottomland species. The equipment would be installed in the present laboratory building which is on Federally owned land.

STATUS OF PROGRAM

FOREST LAND MANAGEMENT

National Forest Protection and Management

Current Activities: The purpose of this program is to manage, protect and develop the national forests and national grasslands under multiple use and for sustained yield. Under these principles natural resources of outdoor recreation, range, timber, watershed, and wildlife are utilized in a planned combination that will best meet the needs of the Nation without impairing productivity of the land. These management and utilization principles were recognized in the Multiple Use-Sustained Yield Act of June 12, 1960 (Public Law 86-517, 74 Stat. 215).

Under the multiple-use principles practically all areas are used for, or serve, more than one purpose or objective. For example, about 50% of the area within the national forests of the continental United States serves five different purposes: (1) timber production, (2) watershed protection, (3) forage production, (4) wildlife production, and (5) recreation. An additional 28% serves four purposes in varying combinations. Of the remainder, 21% of the total serves three purposes with only one percent of the total reserved exclusively for a single purpose, mainly campgrounds and special use areas, such as summer homesites, pastures, corrals, etc.

The varied interests which frequently conflict and which must be reconciled, the vast areas covered, and the unusual complexities clearly require careful planning and skillful management of the national forest properties.

Gross area within unit boundaries encompasses about 226 million acres in 44 States and Puerto Rico, of which some 186.4 million acres are under Forest Service administration. Protection from fire and trespass is made difficult by the large area to be protected, the general inaccessibility, the many thousands of miles of exterior boundary, the intermingled public and private land ownership patterns, the impossibility of taking preventive action with such a problem as lightning-caused fires, and the rapidly increasing public utilization of these lands and their associated resources.

The economic importance of the national forests and national grasslands is evident when it is considered that:

a. They produced a cash income in the fiscal year 1961 of over $106 million. Approximately 65% of this amount is credited to the general fund in the Federal Treasury (miscellaneous receipts). The remainder is distributed in accordance with special acts of Congress, including 25% to the States or counties in which lands are located, and 10% made available for construction and maintenance of the Forest Service system of roads and trails.

In addition to these cash receipts, there are the even greater economic values which result from the processing and end products derived from this utilization of national forest timber, forage, minerals, etc. There are also the important values of water, recreation, and wildlife which cannot be readily expressed in monetary terms.

b. The area within national forest boundaries is equivalent to some 10% of the area of the continental United States.

c. The national forests supplied 8.4 billion board feet of timber in fiscal year 1961 to the Nation's forest products industries. Dependence of the forest products industries on national forest timber continues to increase as the result of depletion of good quality timber on private lands.

d. About 6,000,000 head of domestic livestock (including calves and lambs) are grazed on national forest lands.

e. These lands provide protection to municipal water supplies for nearly all western cities and towns and many in the East, to irrigation water used on about 20,000,000 acres of western lands, and to many streams with water power developments. They provide flood protection to thousands of acres of rich valley lands and help to prevent more rapid siltation of reservoirs and stream channels.

f. They provide a habitat for a large part of the big game animal population, for birds, and for millions of small game animals and furbearers.

g. They provide opportunities for healthful outdoor recreation, with a minimum of restrictions, for the millions of people who yearly visit the national forests.

h. Nearly 4,000,000 people who live in and near the national forests are supported in whole or in part through the economic development arising through management and utilization of the forests and their resources.

The Forest Service, as a part of its regular programs, also directs Federal activities and provides technical guidance to States concerned with the prevention and control of fires which might be caused by an enemy attack in rural areas of the United States.

Selected Examples of Recent Progress:

Receipts

The following table summarizes cash receipts, showing actual for fiscal years 1960 and 1961, and estimated for fiscal years 1962 and 1963:

Class of receipts	1960 Actual	1961 Actual	1962 Estimated	1963 Estimated
Timber sales	$139,904,172	$98,425,492	$114,000,000	$121,000,000
Grazing	3,663,808	3,268,037	3,300,000	3,300,000
Land uses	2,780,245	2,728,318	2,900,000	3,000,000
National grasslands ..	1,864,336	1,677,936	1,700,000	1,700,000
Total receipts	148,212,561	106,099,783	121,900,000	129,000,000
Above amounts include:				
Suspense account, Alaska 1/	(747,761)	(796,567)	(850,000)	(900,000)
Suspense account, O&C Lands 2/	(4,544,826)	(4,069,428)	(4,000,000)	(4,000,000)

1/ Account established pending settlement of Indian rights on Tongass Forest, Alaska.

2/ Account established for Oregon and California railroad grant lands, for which receipts are transferred to Department of Interior for distribution under the Acts of August 28, 1937, June 24, 1954, and August 3, 1961 (43 U.S.C. 1181f-g).

Net area of lands under Forest Service administration changed from 185,772,049 acres as of June 30, 1960, to 186,384,910 acres as of June 30, 1961. This includes 3.8 million acres of land designated as National Grasslands to be permanently administered as part of the national-forest system, 525,585 acres Klamath Indian Forest land acquired in accordance with the Act of August 13, 1954, as amended (68 Stat. 718; 72 Stat. 816), and 392,607 acres remaining in Land Utilization Project lands as of June 30, 1961.

Timber Sales Administration and Management

Timber cut from national forests during fiscal year 1961 totaled 8.4 billion board feet, a decrease of 1 billion board feet from 1960, but still the second highest cut of record. Receipts amounted to $98.4 million, a decrease of $41.5 million from 1960. Volume of timber sold during fiscal year 1961 totaled 8.9 billion board feet, a reduction from the previous year of 3.3 billion board feet. These reductions in timber volumes and receipts were, in large part, due to a pronounced drop in demand for lumber and other forest products during the year.

The Georgia Pacific Alaska Company decided against qualifying for final award of a 7.25 billion board feet timber sale contract in Alaska because of unfavorable current market conditions in the pulp and paper industry.

Depressed markets for lumber and other forest products and lack of timber access roads, particularly in the West, again were major factors in preventing harvest of the full allowable cut of 11.2 billion board feet in 1961. Progress during the past in meeting sustained-yield allowable cut objectives is summarized below:

Fiscal Year	Sustained-Yield Annual Allowable Cut (Billion Board Feet)	Actual Cut	% of Allowable Cut Harvested
1956	9.1	6.9	76
1958	10.2	6.4	63
1960	11.0	9.4	85
1961	11.2	8.4	75

Timber Inventories and Management Plans are an integral part of managing national-forest timber under sustained yield-multiple use principles. The national forests are divided into 380 management units called "working circles" which vary in size from 33,000 acres to 1,703,000 acres of commercial national-forest land. Maximum allowable cut under sustained yield is computed for each working circle from resource inventories and such computations are incorporated in detailed management plans prepared for each unit. Re-inventories and revisions of management plans are programed so the allowable cut from each working circle may be updated at approximately 10-year intervals. Each updating reflects overall progress made in such things as fire protection, reforestation, industrial utilization, accessibility, and inventory techniques. Recent progress in updating the total annual allowable cut is shown in column two of the above table.

Reforestation and Timber Stand Improvement

The reforestation accomplishments in fiscal year 1961 previously were exceeded only by the record high established by the Civilian Conservation Corps in 1936. Fifteen Forest Service nurseries produced 140 million trees for the 1961 program. New nurseries are being developed in four western regions and tree production is being increased in all nurseries to supply trees for the expanding reforestation program.

Major accomplishments in reforestation and timber stand improvement for fiscal year 1961 are shown in the following table:

	Acres Treated		
	Financed under Forest Land Management Appropriation	Financed with Deposits from Timber Sales 1/	F. Y. 1961 Total
Planted or seeded	57,484	100,867	158,351
Measures to obtain natural regeneration (scarifying, burning)	43,952	35,880	79,832
Plantation release	26,847	19,749	46,596
Weeding, thinning, and cull tree treatment (natural stands)	46,558	344,568	391,126
Pruning and crop tree release	2,476	85,239	87,715

1/ Funds collected from timber sale operators under the Knutson-Vandenberg Act of June 9, 1930 (16 U.S.C. 576b).

Effective measures were also taken on a gross area of more than a half million acres to protect young natural and planted or seeded timber stands from severe damage by domestic stock, town ants, rodents (especially porcupines), and other forms of wildlife.

Recreation-Public Use

The national forests received over 3-1/3 times as many visits for recreation in calendar year 1960 as in 1950. Nineteen million visits were made for picnicking, 14-1/2 million for fishing, 7-1/2 million for hunting, 6-1/2 million for camping, and 4-1/2 million for skiing and other winter sports. The rest were for swimming, hiking, riding, or just to enjoy forest environment. In all, there were 92,594,000 visits in 1960 not counting those who simply drove through and enjoyed the scenery.

The record indicates that the strong growth trend in this important national forest activity will continue:

Calendar year	Recreation visits to the national forests	Percentage increase over 1950
1950	27,368,000	
1952	33,007,000	21
1954	40,304,000	47
1956	52,556,000	92
1958	68,449,000	150
1959	81,521,000	198
1960	92,594,000	238
1961 (est.)	102,000,000	273

Present public use facilities are inadequate in both quantity and quality to accommodate the present use as well as the steadily increasing use in a satisfactory manner. To provide for this increasing use, recreation sites must be kept clean and sanitary and must be adequately maintained. Wornout facilities must be rehabilitated and many new facilities must be built to accommodate the growing public need for and utilization of such facilities. Increased appropriations have continued to provide funds necessary to do an adequate job of clean-up, policing, sanitation, and maintenance of existing facilities.

As of June 30, 1961, there were 55,400 family units at national forest camp and picnic sites, of which 26,200 were still in need of rehabilitation. The fiscal year 1962 appropriation provided funds for rehabilitation of an estimated 10,000 such units leaving approximately 16,200 yet to be reworked. In addition, 12,100 new family units have been added since the Operation Outdoors Program started in fiscal year 1958. An additional 2,644 are programed for construction during fiscal year 1962. Since fiscal year 1958, 1343 other types of recreational facilities, such as swimming, boating, and winter sports sites, have been rehabilitated and 118 have been constructed or expanded. Twelve such facilities are to be rehabilitated and 12 additional facilities are to be constructed in fiscal year 1962.

Existing recreation facilities are now being used 70% above their safe capacity. The most acute situations exist where new developments such as reservoirs and highways have brought crowds of recreation seekers to locations where no previous recreation use or facilities existed.

A survey of recreation resources has been completed which consisted of a field inventory and evaluation of existing and potential recreation sites in areas suitable and available for the many public recreation uses of the national forests. The inventory and evaluation of national forest recreation resources will now be used to prepare adequate recreation management plans for each national forest.

A program of Visitor Information Service has been initiated to develop greater understanding and appreciation of the national forest resources and the manner in which they are managed. Examples of fiscal year 1962 activities are:

1. The publication of the first of a series of non-technical booklets on national forest resources and uses;

2. The selection and planning of key areas for development, and the installation of on-the-ground interpretive facilities that will be most beneficial to the forest visitor.

Wildlife Habitat Management

Popularity of the national forests for hunting and fishing continues to increase. The recently completed National Survey of Hunting and Fishing shows a nationwide rise of 15% in hunting trips from 1955 to 1960; during the same period hunter visits to the national forests increased 105%. Fishing trips nationally increased 21%, but on the national forests the increase was 90%.

Where needed, wildlife biologists were added to the staffs of the national forests to improve the multiple use coordination for the protection and development of wildlife habitat. Training schools were held on most of the national forests to further this objective. In most cases State game and fish department personnel participated in and contributed to these training sessions. Such inter-agency cooperation continues to bring together the two essentials of wildlife management -- the States' responsibilities for management of game and fish and the Forest Service responsibility for developing suitable habitat to supply essential food, cover, and water.

Habitat-improvement accomplishments during the past year were:

Permanent wildlife openings	2,114 acres
Prescribed burns	37,650 acres
Revegetation of key wildlife areas	10,800 acres
Small water developments	136
Fencing key areas	17,660 acres
Stream improvements	20 miles
Lake improvement	195 acres
Fishing lakes	100 acres
Waterfowl lakes	560 acres
Access roads and trails	130 miles

In addition, the State conservation agencies, operating under cooperative agreements, contributed substantially to habitat improvement on the national forests and national grasslands. Both Federal and State funds were used to maintain existing improvements on approximately 100,000 acres.

Range Resource Management

During calendar year 1960, the following numbers of livestock were permitted to graze on the national forests, national grasslands, and land utilization projects:

	Number	Animal Months
Cattle, horses, and swine ..	1,307,333	6,714,644
Sheep and goats	2,574,347	7,209,418

Permits are issued for adult animals only. The offspring of permitted animals under six months of age are allowed to graze without additional charge. The total number of domestic animals, permitted stock plus the offspring, is about six million. In addition to the 32,658 permits covering the grazing of livestock under paid and free permits, 891 crossing permits were granted and 2,214 permits were issued for grazing on private land waived to the Government for joint management with Government land.

Grazing receipts from lands administered by the Forest Service in fiscal year 1961 were $3,898,497 as compared to $4,506,489 in fiscal year 1960. Source of receipts is as follows:

	1960	1961
National Forests	$3,663,808	$3,268,037
National Grasslands and Land Utilization Projects	842,681	630,460
Total	4,506,489	3,898,497

Grazing fees are calculated each year by a formula which uses the average price per hundred pounds received by producers in the western States for beef and lambs. The variation in the average grazing fees per animal month are as follows:

	Cattle	Sheep
1961	$0.46	$0.0875
1960	0.51	0.0925

As directed by the Senate in Report No. 294 on the Interior Department and Related Agencies Appropriation Bill, 1962, a trial program of public rangeland appraisal was undertaken cooperatively with the Bureau of Land Management, Department of the Interior, on selected areas in Montana, Oregon, and Colorado.

Under the leadership of the Economic Research Service, the Forest Service cooperated, along with the Bureau of Land Management, in work designed to explore the importance of public rangelands to ranchers in selected western range areas.

Approximately 1,069 plan equivalents of range allotment analysis were accomplished in fiscal year 1961 to bring the level of completion to 43% of the 11,327 Forest Service allotments.

Major revision of the "Grazing Permit System" section of the Forest Service Manual and Handbook was completed and submitted for review by Forest Service field officers.

Range Revegetation

During fiscal year 1961, 148,011 acres of depleted rangeland were treated either by seeding or by removal of competing vegetation. Significantly, in fiscal year 1961 the Forest Service reached the 1,000,000 acre mark in range rehabilitation. Present plans call for an additional 4 million acres to be treated in the next 10 years. Improved equipment, more knowledge of techniques, and possibilities of developing more and better varieties of species of plants to work with may allow even more acreage to be treated. Two Servicewide handbooks for range seeding equipment use were developed during fiscal year 1961.

Range Improvements

Approximately 50% of the funds allocated were expended for maintenance of existing range improvements. In addition, during fiscal year 1961, 1076 miles of fence were constructed, along with 164 cattleguards, 110 miles of stock driveway, and 447 water developments. In addition, 182 miles of fence, 33 cattleguards, 29 miles of stock driveway, and 437 water developments were constructed through cooperation with permittees.

Soil and Water Management

The restoration of deteriorated watersheds with special attention to structural and vegetative treatment measures was extended during fiscal year 1961 to embrace areas on more than 100 national forests and grasslands. Numbers of successfully restored sites, following damaging water runoff and soil erosion increased significantly. In the Southeast over 60 major gullies in the highly erosive Piedmont soils on land acquired under the Weeks Law were controlled with a combination of structural and vegetative measures. In the East, channel damage from the 1959 storm was repaired on the Zealand River in the White Mountain National Forest and work continued on spoil bank stabilization in coal and manganese mining areas. In the Rocky Mountain west restoration work continued on such projects as the Taos Canyon in New Mexico, Sheep Creek in Colorado, and Timber Creek in Montana where sediment basins, gully plugs, water diversion and terraces supplemented with vegetation have greatly improved the ground cover and stream flow. Similar projects were carried on in California. In the Pacific Northwest sand dune control was slightly accelerated and work was started on log jam removals to protect stream banks, valley bottoms, and damages to roads and other improvements.

In the Intermountain Region land treatment measures were applied to some 30 projects. Intense summer rains falling on some of these areas demonstrated treatment effectiveness. The City of Blanding, Utah, financed contour trenching and seeding on 100 acres of private land to complete treatment on the critical areas of that municipal watershed. Progress continued on the Beaver Creek project, Coconino National Forest, Arizona, where evaluations are being made of the effects of pine stand modification, juniper control, and clear cutting on watershed conditions. Collection of information on water yields and rates of erosion as related to multiple-use management of resources continued in all regions.

The forest soils program moved ahead in all regions covering some 5,000,000 acres. Two survey reports have been completed and published. Thirty-four other project areas are under way with fifteen of them already surveyed and reports in various stages of preparation. A soil survey handbook for the use of administrative personnel was completed and a series of servicewide training schools on soils was conducted for field men at all levels.

Mineral Claims, Leases, and Other Land Uses

Mining Claims. The determination of surface rights of mining claims under the Act of July 23, 1955 (P.L. 84-167) continues to be a major activity. Following is a summary of progress to June 30, 1961:

Item	Number of areas	Acres	Estimated number of mining claims
Surface right determination to be done (revised estimate) ...	1,000	145,000,000	1,250,000
Field examination during 1961 ..	165	28,318,000	213,400
Total field examinations completed	742	103,155,000	995,600
150-day publication period expired	653	87,428,000	934,400
Determination job complete	340	44,761,000	351,200

As a result of determination of surface right procedure there are now 17,100 mining claims on which the claimants have asserted the validity of their surface rights. These claims are now being examined by the technical mineral examiners to determine their validity. That means that on about 87,000,000 acres of national-forest land which included an estimated 934,000 mining claims the United States now has the right to manage the surface on all but 17,100 claims, and some of those may be resolved in favor of the United States.

Mineral permits and leases. The Secretary of Agriculture has the authority to dispose of common varieties of mineral materials on all lands under his jurisdiction. Permits and leases for oil and gas, coal, oil shale, potassium, sodium, phosphate, and sulfur on both public domain and acquired national-forest and national grasslands and for hard rock minerals on acquired lands continue to be issued by the Bureau of Land Management, Department of the Interior, with the advice or consent of the Forest Service. The Forest Service supervises the land management protection, restoration, and rehabilitation provisions of all such leases and permits.

The volume of mineral leases on land reserved from the public domain is steadily increasing. In 1961, 14,696,341 acres were under lease. The receipts are not credited as national forest receipts, but are collected by the Department of the Interior and distributed to the reclamation fund, to States in which the lands are located, and to the Treasury as prescribed in applicable legislation. However, mineral receipts were $2,076,950 in fiscal year 1961 for 3,549,446 acres of acquired lands under permit or lease. These are credited as national forest and national grasslands receipts.

Development of properties under lease and new properties requires increased supervision. Strip mining creates difficult land use and protection problems. Road construction, location of improvements, construction of dams and reservoirs, protection of soil, water, and other surface resources, and fire protection require continued vigilance.

Miscellaneous Land Uses

National-forest land and other land administered by the Forest Service may be used for special purposes when such uses are in the public interest. Now in effect are about 37,100 special-use permits for 80 different purposes such as pastures, sawmills, television transmitters, roads, and other desirable uses, plus 22,800 additional permits for such recreational uses as resorts, ski lifts, organization sites, etc. Such permits to public agencies are issued free, those to nonprofit organizations bear but a nominal charge, and those for commercial and individual use bear a fee based on the value of the land for the purpose. Fees for special land uses totaled $1,669,966 in 1961, in contrast to $1,589,960 in 1960.

Land Exchange and Ownership Adjustments

Under some 90 separate laws, Congress has authorized the exchange of national forest land and timber for private and State lands intermingled with or adjacent to the national forests. The principal objective of these laws is to promote consolidation of the national forests for more effective land and water conservation, greater public service and more efficient management. In carrying out the program, emphasis is placed on the exchange of intermingled, scattered or isolated parcels of land to bring about a more desirable ownership pattern from the standpoint of national forest administration. Through these transactions national forest lands suited to and needed for private, community or industrial development can be made available for such purposes. Conversely, lands best suited to Federal ownership and management can be brought into such ownership. During the fiscal year ending June 30, 1961, 82 exchange proposals were approved in which 206,579 acres will be conveyed to the United States. In exchange the Government will convey 85,480 acres of national forest land, $573,291 worth of national forest timber and 260,000 acres of unreserved public domain lands to the proponents.

Land Status Records

Complete and accurate records of land ownership and status are an essential working tool of Forest Service land managers. Existing records have proved to be inadequate for this purpose. Accordingly, a revised records system has been developed and in fiscal year 1961 it was field tested in one Forest Service region. It is now ready for full application in all regions.

Land Classification

Through this activity, attention currently is being given to the best location of national forest boundaries (155 national forests); to the desirability of one or more additional national forests in the mid-Appalachian area; to the need for major consolidations of public ownerships in national forests and national grasslands where public lands are dispersed or checkerboarded; to several proposals that national forest lands be transferred to other status and administration; to the most effective status and use of lands around a number of major water storage projects that involve national forests and grasslands; and to the most effective status and use of the remaining 29 Land Utilization Projects administered by the Forest Service.

Land Line Locations

An accelerated land line location program, initiated in fiscal year 1958, has the following purposes: search for, properly identify, and perpetuate property and other land line courses; obtain proper reestablishment of "lost" corners; and, survey and mark property lines between national forest and non-Federal lands.

The Government's interest in land and investment in land improvements continue to be jeopardized by trespass and occasional adverse ownership claims because there is no system for maintaining property lines and corner surveys. This program meets that need for the national forests.

To the end of calendar year 1960, the following actions have been accomplished under the accelerated program: search initiated for 28,253 corners; 7,962 corners monumented to prescribed standards; 17,833 corners found which are believed authentic and can be remonumented without additional cadastral surveys; 551 miles of line marked and posted to full standards; and 4,443 miles marked and posted to partial standard.

The work ahead consists of searching for and evaluating an estimated 722,000 property corners; remonumenting 738,000 corners; and marking and posting 208,000 miles of property line to standard. Corners must be monumented before the associated property line marking and posting can be done to acceptable standard.

Mapping

During fiscal year 1961, 54,560 square miles of planimetric mapping and 814 square miles of topographic mapping was completed. Contracts for aerial photography were awarded for an additional area of 6,840 square miles.

The addition of national grasslands and other areas to lands under Forest Service administration has had the effect of reducing the percentage of completion of needed mapping. Reliable planimetric maps are now available for about 53% of the area of need, and topographic mapping has been completed for approximately 35% of the required coverage.

Forest Fire Protection

Forest fire control techniques and procedures continue to be changed to effectively utilize new findings of research and development. Modern chemicals, new electronic devices, improved aircraft and development and adaptions of specialized equipment have greatly changed fire fighting within the last few years. An aggressive and modern training program is required to maintain the competency of fire control personnel and to be assured they are fully utilizing current technology.

To emphasize and implement this training need the first national fire generalship school was held early in 1961, a national air operations training workshop was conducted, training devices were studied and evaluated, more than 100 fire supervisors from eastern regions were used in western regions during the 1961 fire season with emphasis on fire overhead qualification program, a Crew Boss training film and a Common Weather Problems in Fire Control film are being made.

Regional Fire Chiefs met for the first time in several years to decide upon procedures and practices to emphasize in fire control work for the next few years.

A national program for fire-weather service prepared jointly by Forest Service, Weather Bureau and Department of Interior agencies got underway during the year.

A lightweight heat reflective aluminized shelter was developed to provide adequate protection in most cases of wildfire entrapment. Treated fire-resistant clothing for fire fighters underwent service-wide field tests.

An improved disposable sleeping bag was developed. A heat detection probe and a propane hand firing torch is being field tested. Electronic equipment for automatically measuring, transmitting, and recording fire weather was first placed in use. Working models of a new hand held trencher are giving excellent results, and preliminary design was started on a self propelled trencher. Tests were conducted to determine most efficient types of pumps and mixers for chemical fire retardant processing.

Strengthening of the fire prevention program has shown results in reducing the number of man-caused fires. For the first eight months of 1961 there were 3,140 man-caused fires, compared with 3,349 and 3,479 for the same eight month period in 1959 and 1960 respectively. This reflects very favorable progress, particularly in view of the critical fire hazard conditions that existed in 1961.

Five new large mobile reinforcement crews with aerial transportation materially assisted on many large fires in the western regions. These highly trained firefighters located in Oregon, California, Idaho and Montana were used to back up local initial attack forces. Air tanker use continues to increase and becomes more effective as improved methods and techniques are developed. Helicopters were used on more fires and have become an indispensable tool for the fire boss. Many more helitack crews were established and specially trained for transport by helicopter to remote and inaccessible fires on initial attack. Other small crews were organized or enlarged for more rapid and effective initial attack on small fires to keep them from reaching large size.

Fire problems in a possible nuclear attack could be far greater than ever encountered anywhere previously. The Forest Service is providing leadership in planning and preparing for the fire aspects of civil defense in rural areas. During 1961 personnel worked with other members of the National Defense Advisory Committee to plan and conduct a National Fire Staff and Command School at Battle Creek, Michigan. A national fire organization plan for wartime emergencies was developed by this same group.

Construction and Maintenance of Structural Improvements

Construction funds were used to meet urgent needs for betterment and replacement of existing improvements and to provide additional urgently needed facilities. Priority was given to the construction of dwellings and barracks to house employees at locations where private rentals are not available to meet the needs of expanding national forest programs. Following is a summary of the major fiscal year 1961 accomplishments:

	Number of Units	
	Construction	Betterment
Dwellings	75	93
Barracks, cabins and house trailers	62	35
Fire lookouts	32	6
Service and storage buildings -- all types	147	89

Approximately 70% of this construction and betterment was done with funds under the National Forest Protection and Management activity and 30% from all other funds.

High priority maintenance was accomplished on all fire and general administrative improvements such as 5,000 dwellings, barracks, and cabins; 1,800 fire lookouts; and 7,000 office and utility buildings and related utility systems. Fifteen hundred radiophones were purchased and installed in the communications network. Thirteen thousand five hundred existing radiophones in the network were maintained to standard.

Rehabilitation of Burns

These funds provide for rehabilitation of burned areas not generally located on watersheds from which floods would eminently threaten life or property but where site deterioration, if not stopped, would progressively worsen. On commercial forest lands tree planting for timber production is the major job complemented with supplemental measures such as grass seeding, channel clearing, terracing, and gully plugging. On non-commercial forest lands where damaging water runoff and soil erosion are likely, emphasis is directed toward watershed protection by grass seeding, terracing, gully plugging and other recognized restoration methods.

Some 300,000 acres of national forest lands were burned over in calendar year 1960. Since these funds were available it was possible to take prompt restoration measures on those burned over areas which presented critically high erosion hazard and serious loss of site productivity. Treatment measures such as terracing, revegetation, rehabilitation of channels and stabilization of denuded road banks were applied to over 70,000 acres of burned over land and 150 miles of stream channels and roadbanks.

This prompt treatment helped to stabilize these areas, prevented excessive and costly damages, and kept the site from excessive deterioration until regular programs can restore site productivity.

Fighting Forest Fires

Current Activities: This program covers fire fighting on the national forests and the build-up of emergency fire fighting forces under peak burning conditions. Experience has demonstrated that material savings are made by having a strong force ready to discover, attack and stop fast-spreading fires while they are small. Expenditures for the regular fire control organization are financed from the activity "National Forest Protection and Management." The temporary build-up in forces when fire conditions are critical and the suppression of fires is financed from the "Fighting Forest Fires" fund.

Selected Examples of Recent Progress

The Calendar Year 1960 Fire Season

There were 12,823 fires on the national forests in 1960 - the greatest number since 1940. The 424,295 acres burned was the most since 1942. The 1955-1959 five-year average for number of fires is 9,715 and for area burned is 235,388 acres. Greatest increases were in the western regions where fires were 142 percent and area burned was 211 percent of the 5-year average. Aircraft use for 1960 set a record with 48,069 hours of flying time. This was 47 percent more than 1959 and nearly three times the 1956 use. Aircraft carried 59,758 passengers, an increase of 67 percent; and 2,786,371 pounds of cargo, 115 percent more than 1959. Aerial tankers cascaded nearly 6,000,000 gallons of chemical fire retardants to 1,050 fires. In 1959, 3,360,000 gallons were dropped on 507 fires.

Eighteen persons lost their lives fighting forest fires. Nine contract airplane pilots and two regular Forest Service employees were killed in aircraft crashes. Three men were killed by falling objects and two were burned to death. One employee was killed in a vehicle accident and another died of carbon monoxide poisoning.

The Calendar Year 1961 Fire Season

The year 1961 was one of the most severe forest fire years in the history of the Forest Service. There were many large fires in Western States with the greatest losses in Idaho and California. Prolonged periods of no precipitation, high temperatures and low humidities coupled with extended drought of two to five years in various areas made the fire danger extreme in Montana, Idaho, Oregon, Utah, Nevada, California, and Arizona. The season started two to four weeks earlier than normal in most of these States. By the end of August more fires had occurred in the six Western Regions than any entire year of record. Most were caused by lightning.

Fire occurrence in Arizona and New Mexico was exceptionally high in June and July with nearly 2300 fires compared to 1956-1960 five-year average of 1,230. During August, 5,700 fires started on all national forests but mostly in Montana, Idaho, Washington, Oregon, and California.

The 5-year average for August is 2,400 fires. Unusually heavy concentration of lightning fires occurred in mid-August. There were nearly 600 fires in California during the period August 10 to 14, and about 1,300 fires during the period August 13 to 16 in Montana, Idaho, Oregon, and Washington.

During the first eight months of 1961, 13,270 fires burned 206,000 acres on lands protected by the Forest Service. Lightning caused 10,130 fires, nearly 14% more than for any entire calendar year of record.

As a result of this severe fire situation, a supplemental appropriation of $36,000,000 is anticipated for fiscal year 1962.

Insect and Disease Control

Current Activities: The purpose of this program is to protect the nation's forest resources against destructive forest insects and diseases by preventing, detecting, evaluating and suppressing outbreaks. The program is carried out in cooperation with other Federal and with non-Federal agencies. Prevention is aimed at creating or maintaining healthy and vigorous forests to guard against outbreaks; detection is aimed at the discovery of insect and disease outbreaks in the earliest possible stages of their build-up; evaluation includes an assessment of the current and potential significance of the pest problem, an appraisal of the resource threatened, and a determination of the need for control. Suppression is aimed at prompt action to reduce the losses caused by insects and diseases to tolerable levels. Control of forest insects and diseases is governed by two national pest control laws. The Lea Act of 1940 applies specifically to control of the introduced white pine blister rust. The Forest Pest Control Act of 1947 applies to forest insects and all other tree diseases.

Pest survey and control activities consolidated in single units at Forest Service regional offices. Effective July 1, 1961, responsibility for forest insect and disease detection and evaluation surveys was transferred from research divisions at forest and range experiment stations to forest pest control units in Forest Service regional offices. The transfer was made to facilitate administration of the Forest Pest Control Act, to intensify insect and disease surveys, aid in technical direction of suppression projects, and strengthen research on forest insect and disease problems. Entomologists and pathologists remaining at forest experiment stations will henceforth devote full time to forest insect and disease research without interruption for survey work. The increased tempo of research will make it possible to speed improvement in survey and control methods.

Selected Examples of Recent Progress

White Pine Blister Rust -- Calendar Year 1960

White pine blister rust, the serious disease of soft pines which reached this country from Europe, has been under successful attack for some time. The control program is well advanced in the East and Lake States white pine stands where 82% of the area under treatment is on a maintenance basis. The major control effort is now going into the white pine areas of the West, chiefly Idaho, where the blister rust fungus continues to cause widespread damage. However, control work has been accelerated there as a result of the spectacular success of antibiotic fungicides in killing the blister rust fungus. Relatively small amounts of the antibiotic chemicals, cycloheximide and phytoactin, when applied to infected trees either to the trunk or to the foliage, will destroy the blister rust infection present in the trees.

Highlights of accomplishments in blister rust control during 1960 are:

(1) 8.5 million western white pine trees on 45,000 acres were treated by applying antibiotic fungicide to the basal stem by hand equipment or to the foliage by aircraft.

(2) Control accomplishments by eradication of the ribes host in Idaho and other sections of the country include:

(a) Initial work done on 50,000 acres.
(b) Rework was done on 115,000 acres.
(c) Maintenance work was done on 1.4 million acres.
(d) Surveys were made on 3.7 million acres.
(e) Ribes hosts destroyed totaled 8.7 million.

Insects and Diseases Other than Blister Rust

Detection and Evaluation Surveys

Forest Diseases

Need for Dwarfmistletoe Evaluation Increasing -- More intensive management of forests in the West is causing increased interest in dwarfmistletoe impact on growth. Surveys were performed on 110,000 acres to delineate infection centers for sanitation logging, more intensive evaluations were made of control work previously done to increase efficiency, and an economic study of the impact on ponderosa pine was accelerated in Western States to determine cost-benefit ratios.

Cooperative Surveys for Oak Wilt Continued -- The scope and intensity of cooperative surveys to locate trees infected with oak wilt was increased. Aerial surveys were made over about 40 million acres

of oak forests in six States, along the Appalachian Mountains and in the Ozark Mountains. The 5,500 infected trees located were more than have been found in any previous year. One new infection center each was found on the Nicolet National Forest in Wisconsin and in Dallas, Texas. The former represents the northernmost infection in the Lake States, the latter on two ornamentals obviously introduced from infected eastern areas, a westward spread of several hundred miles. Both were eradicated.

Fomes annosus Surveys Started -- In the Northeast, Southeast, and Southern States a coordinated survey to determine the extent of and intensity of Fomes annosus, a killing root rot of eastern coniferous plantations, was started and partially completed. Initial results indicate widespread occurrence and a serious damage potential.

Damaging Sugar Maple Disease Identified -- A disease damaging sugar maple in Pennsylvania was identified tentatively as Pyrenochaeta minuta. Diseased trees are heavily damaged by this canker-producing organism prior to the death of both young seedlings and old trees. It appears to be a potentially serious threat to the maple sugar industry, warranting additional evaluation.

Ash Decline in New York Widespread -- A limited survey by the Forest Service and a more comprehensive one by New York State University, College of Forestry, revealed that in some counties in southeastern New York over 90% of the ash trees are dying from as yet an unknown cause. No trees showing symptoms of ash decline have been known to recover. Baseball bats are made from the ash species affected, hence manufacturers of this item are concerned.

Forest Insects

Mountain Pine Beetle Epidemics Widespread in Western States -- Mountain pine beetle epidemics of varying magnitude occurred in several of the Western States. Stands of lodgepole pine in Utah and Idaho were particularly hard hit. Old-growth stands of western white pine in north Idaho also were severely attacked, and centers of infestations developed or continued in second-growth ponderosa Pine in parts of Oregon, California, Nevada, and Idaho. Suppression of infestations was undertaken in most outbreak areas.

Engelmann Spruce Beetle Outbreaks Severe in Rocky Mountains -- The Engelmann spruce beetle was especially destructive in the high elevation stands of spruce in Idaho, Montana, Wyoming, Utah, Colorado, and New Mexico. Outbreaks were suppressed in most areas by logging or by spraying infested trees, cull logs and stumps with toxic chemicals. In some areas, green trees were felled to trap attacking beetles.

Large Acreage of Southern Pine Attacked by Black Turpentine Beetle -- The black turpentine beetle was widespread in the Southern and Southeastern States. There was no major outbreak, but tree killing in moderate amounts over large areas resulted in severe aggregate losses. Exceptionally large acreages of pine stands were affected in Louisiana and Mississippi. Small acreages were infested in east Texas, Alabama, Arkansas, and North and South Carolina. Infestations in most areas were suppressed by salvaging infested trees or by spraying them with toxic oils.

Southern Pine Beetle Poses Threat to Stands of Pine in Southern States -- Outbreaks of the southern pine beetle continue to pose serious threats to extensive stands of southern pine in east Texas, Alabama, and other Southern States. As soon as outbreaks are suppressed in one area, they erupt elsewhere and kill groups of trees over large areas. Thousands of the infested trees were salvaged to avert additional loss. Where salvage was not feasible, infested trees were sprayed with toxic oils.

Spruce Budworm Epidemics Plague Mixed-conifer Forests across the Nation -- Epidemics of the spruce budworm continued in most of the spruce-fir forests of the Nation. Infestations in Maine were static, but at a high level. Those in Minnesota increased in intensity and spread southward. In Montana, infestations on a gross area of some 3,500,000 acres were little changed from prior years. In Colorado and New Mexico, outbreaks were the most extensive on record. Infestations in Oregon declined. Aerial spraying was undertaken to suppress populations in limited areas where tree killing was imminent or in progress.

Pine Sawflies Destructive in Many Areas -- Several species of sawflies were destructive to pine stands in many areas throughout the country. The most extensive infestation occurred in stands of Virginia and pitch pine in Maryland and Virginia, and in stands of southern pine in North Carolina, Georgia, and Florida. Other infestations of significance developed in southern pine forests in Louisiana and east Texas, in stands of white pine in Ohio, in lodgepole pine in Montana and Utah, and in red and jack pine plantations in lower Michigan. Suppression of sawfly infestations was limited. Virus sprays were used to control the European pine sawfly in Ohio, and DDT was used on other species in Michigan and Wisconsin.

Severity of Black-headed Budworm Infestation Declines in Southeast Alaska -- The threat posed to the hemlock-spruce forests in southeast Alaska by the black-headed budworm and the hemlock sawfly was reduced as the insect population declined. The factors responsible for the decline are not fully understood, although adverse weather conditions are believed to have played an important role.

Bark Beetles Abundant in Pine Stands in California -- The western pine beetle, mountain pine beetle, and Ips occurred in outbreak numbers in stands of ponderosa pine in California, particularly adjacent to large burns and in areas of deficient precipitation in the Sierra Nevada Mountains below 5,000 elevation. The threat of outbreaks to intensify and spread prompted major efforts to suppress populations in all areas.

Surveys Reveal European Pine Shoot Moth in Additional Communities in Washington and Oregon -- An intensive Federal-State cooperative survey of ornamental and forest nurseries, sales yards, and ornamental plantings in Washington and Oregon, prompted by discovery of this insect in 1959 in western Washington, revealed additional infestations in both States, mainly in Seattle, Washington, and vicinity. The infested trees at two locations in Oregon were destroyed and steps were taken to eradicate infestations at Spokane, Washington. Quarantines were imposed by western States to restrict movement of infested trees. Tests of methyl bromide fumigation, as a method of controlling the shoot moth in nurseries and in ornamental plantings, were increased.

Infestations of Jack Pine Budworm Severe in Lake States -- Populations of the jack pine budworm increased greatly in stands of jack pine in several areas in Minnesota, Michigan, and Wisconsin. Mature jack pines are being harvested wherever feasible to reduce the hazard of infestations and aerial spraying was undertaken in Minnesota.

Extensive Areas of Bottomland Hardwoods in Louisiana and Alabama Defoliated by Forest Tent Caterpillars -- The forest tent caterpillar severely defoliated water tupelo, black gum, sweet gum, and other bottomland hardwoods in extensive areas in Louisiana and Alabama. In Louisiana, trees on about 500,000 acres were completely stripped. An additional 1,000,000 acres were partially defoliated. In Alabama, the total area of infestation was estimated at more than a million acres. Natural controls thus far have failed to reduce the severity of infestations and chemical controls may be needed to prevent widespread tree killing.

Elm Spanworm Outbreak Remains Serious in the Southern Appalachians -- The elm spanworm has been epidemic since 1954 and has caused severe defoliation of oaks, hickories, and other hardwoods in western North Carolina, eastern Tennessee, and northern Georgia. In 1961 an estimated 1-1/2 million acres were affected. While this represented a slight decrease in the total acreage defoliated in 1960, the areas of heavy defoliation increased in 1961. Aerial spraying operations were limited to protection of high-use areas.

Control Accomplishments -- Calendar Year 1960

Insect Control

The Forest Service conducted or participated in 184 separate control projects in 27 States. Control was undertaken on 80 national forests against a wide variety of insects -- 18 different species of bark beetles, 6 species of defoliators, and other insects such as weevils, aphids, spittlebugs, and those in cones and seeds of forest trees. Control of bark beetles demanded the biggest share of available funds -- $1.7 million. The largest project was in Utah where more than $719,000 was spent to suppress a mountain pine beetle outbreak. Defoliating insects, primarily spruce budworm, were suppressed on 374,935 acres at a total cost of $425,379. Significant accomplishments are summarized in the following table:

Land Ownership	Bark Beetles		Defoliators		Other Insects	
	Trees Treated 1/	Control Costs	Acres Treated	Control Costs	Acres Treated	Control Costs
National Forests	935,428	$1,624,797 1/	138,225	$261,848 1/	3,314	$19,641 2/
Non-Federal	137,021	125,953	236,710	163,531	749	20,835
Total	1,072,449	1,750,750	374,935	425,379	4,063	40,476

1/ Includes cull logs and stumps.
2/ Includes Federal participation on non-Federal lands.

Disease Control

Control of forest diseases other than white pine blister rust by indirect means, such as salvage logging and application of preventive measures in all forest management activities apt to induce disease occurrence, was given special emphasis.

Direct control activities were limited to oak wilt and dwarfmistletoe. The Forest Service did oak wilt control on five national forests in the Appalachian Mountain Range and participated in cooperative control with six States on non-Federal lands in the same general area. This program resulted in surveying 40 million acres and the location and treatment of 5,595 infected trees. Dwarfmistletoe direct control activities were confined to pilot control projects on national forests in Oregon and Colorado to establish cost records needed in an economic study designed to provide cost-benefit ratios. Accomplishments were 5,919 trees treated.

OBLIGATIONS, INSECT AND DISEASE CONTROL FUNDS
(Exclusive of White Pine Blister Rust Control)
FISCAL YEAR 1961 AND ESTIMATES FOR FISCAL YEARS 1962 AND 1963

Project	1961	1962 (Estimated) 1/	1963 (Estimated) 1/
Forest insects feeding on or under the bark 2/			
Northern Rocky Mountain States ...	$61,323	$55,000	$50,000
Rocky Mountain States	142,172	140,000	230,000
Southwestern States	56,168	195,000	63,000
Intermountain States	1,174,407	1,713,500	1,950,000
California	396,865	291,000	300,000
Pacific Northwest States	22,792	20,000	25,000
Eastern States	1,551	3,000	14,000
Southern States	238,798	280,000	300,000
Forest insects feeding on cones, seeds, buds, foliage or shoots 3/			
Northern Rocky Mountain States ...	14,269	479,000	517,000
Rocky Mountain States	4,595	63,000	400,000
Southwestern States	6,526	440,000	300,000
Intermountain States	3,300	- -	500,000
California	972	- -	10,000
Pacific Northwest States	78,697	121,000	46,000
Eastern States	32,924	30,000	27,000
Southern States	14,656	35,000	73,000
North Central States	30,315	235,000	200,000
Alaska	9,601	5,000	30,000
Forest tree diseases 4/			
Northern Rocky Mountain States ...	- -	- -	15,000
Rocky Mountain States	513	- -	15,000
Intermountain States	995	4,000	5,000
Pacific Northwest States	43,164	44,000	50,000
California	15,000	10,000	15,000
Eastern States	86,204	86,000	90,000
Southern States	13,956	13,000	20,000
Administration, surveys, and pre-control work 5/	1,381,010	1,375,000	1,640,000
Department of Interior insect and disease projects	284,690	347,500	400,000
Total available or estimated	4,115,463	5,985,000	7,285,000

1/ Estimates of project needs are forecast a year or more in advance of anticipated needs and are always subject to fluctuations. Adjustments are made between projects as necessary depending on discovery of new outbreaks and expanded needs on approved projects. In addition to these amounts, a supplemental appropriation of $1 million will be proposed for fiscal year 1962 to meet emergency control needs.

2/ Includes mountain pine, western pine, Engelmann spruce, southern pine, black turpentine and other beetles, Ips, flatheaded borers, balsam woolly aphid, and scale insects.

3/ Includes spruce budworm, jackpine budworm, Douglas-fir tussock moth, elm spanworm, sawflies, Saratoga spittlebug, European pine shoot moth, white pine weevil, reproduction weevil, and seed and cone insects.

4/ Includes oakwilt, dwarfmistletoe, and Fomes annosus.

5/ This item provides for administration of the Forest Pest Control Act, for continuous pre-control activities, for quick action on many projects nationwide to stop outbreaks while they are small, and for detection and evaluation surveys.

DEPARTMENT OF THE INTERIOR

(Activities under funds transferred from this Appropriation for Insect and Disease Control)

Introduction

Prevention of serious losses from diseases and insects in the forests under the jurisdiction of the Department of the Interior is an important activity under the Forest Pest Control program. Approximately 182 million acres of Forest and woodlands are administered by the Department of the Interior, including 8.3 million acres by the National Park Service, 2 Million acres by the Bureau of Sport Fisheries and Wildlife, 13.1 million acres by the Bureau of Indian Affairs, and 159.8 million acres by the Bureau of Land Management.

Control Accomplishments

White Pine Blister Rust

There are 547,932 acres of control area administered by the Department of the Interior of which 375,546 are under the direction of the National Park Service, 72,549 under the direction of the Bureau of Land Management, and 99,837 under the direction of the Bureau of Indian Affairs.

The white pine blister rust control area of the Bureau of Indian Affairs was reduced by 43,107 acres with the termination of the Government trust responsibility on the Menominee Indian Reservation, Wisconsin. Most of the eradication of ribes on the reservations is accomplished by Indians.

The Bureau of Land Management is continuing its study of antibiotic treatment of rust infection. Results are looking very promising and it is hoped that a small operational test of aerial antibiotic control may be made next season. The Bureau now has 15 rust resistant white pines containing 104 cones which were control pollinated in 1960. All these trees have been released from underbrush and have been fertilized to stimulate cone production.

The National Park Service has deferred indefinitely all white pine blister rust work in Sequoia-Kings Canyon National Parks and also certain "low risk" areas within Yosemite National Park. Studies indicate that ecological barriers exist which apparently preclude the possibility of a successful invasion of rust spores in Sequoia-Kings Canyon. In order to increase the effectiveness of the program, the use of antibiotics is being expanded where applicable.

Insects and Other Diseases

The importance of maintaining the forests in a healthy condition continues to grow, especially as public use increases. This has intensified the need for much additional control work. Furthermore, the maintenance of insect populations at endemic levels in the far West is becoming increasingly difficult due to continued below normal moisture conditions. This is especially true in the California areas -- National Parks, Indian Reservations, and Public Domain.

The first of the three-year mistletoe recleaning programs was completed on the Mescalero Indian Reservation, New Mexico. This project is an experiment designed to test the effectiveness of controlling dwarf-mistletoe within commercial stands of ponderosa pine.

Spruce budworm infestations are reported on a large area of the Navajo Indian Reservation, Arizona, and a smaller area of the Yakima Indian Reservation, Washington. These infestations extend to adjacent lands.

A large infestation of mountain pine beetle has occurred on the Uintah and Ouray Indian Reservation, Utah, and adjoining national forest lands. Ground surveys will determine the severity of the outbreak and suitable control measures.

On the Santa Rosa Indian Reservation in California, the Toro Peaks area was aerially sprayed to control the Ips beetle outbreak. This dangerous infestation was confined to the Jeffrey and sugar pine slash. Some maintenance control will be required as a followup of the control action.

The Bureau of Land Management is continuing its surveillance of the Ips and Decdroctenous infestation in some 50,000 acres within the Osborne Hill Zone of the Mother Lode Country of California.

There are major mountain pine beetle outbreaks in Grant Teton, Yosemite, and Lassen Volcanic National Parks.

The Lodgepole Needle Miner epidemic in Yosemite National Park covers an area of approximately 60,000 acres. Aerial spraying of malathion, using helicopters was successfully accomplished on approximately 5,000 acres of the public-use area in and adjacent to Tuolumne Meadows.

A Lodgepole Needle Miner outbreak of growing proportions, though not as widespread as that found in Yosemite, has been identified in Sequoia-Kings Canyon National Parks and limited control work is planned for fiscal year 1964.

An expanded control program to combat an increasingly aggressive infestation of Elm Spanworm is planned in Great Smoky Mountains National Park. The infestation extends to adjacent forest lands.

The latent infestation of Gypsy Moth in Acadia National Park has suddenly built up to epidemic proportions in the past year. Approximately 5,000 acres will require treatment this year in the Park and to adjacent forest areas in Maine.

Acquisition of Lands

These funds are used to purchase land for the protection and management of the watersheds of navigable streams and for the production of timber under the provisions of the Weeks Law of March 1, 1911, as amended (16 U.S.C. 513-519, 521).

In fiscal year 1961, 83 cases involving 8,593 acres were approved for purchase pursuant to the Weeks Law. These properties are located in 19 national forests in 13 States. The lands are generally depleted forest areas or worn out or unproductive farm lands. The purchase of such lands for management under national forest principles will provide increased public benefits and result in more economical and efficient administration of the national forest units involved.

Further consolidation of land ownership within the national forests, and transfer of certain critical areas to public ownership, is an urgent need to permit the most effective use of areas now in public ownership, to permit productive use of lands now largely unmanaged, and to permit more efficient administration of existing national forests. This program should be carried out expeditiously in order to forestall further resource depletion.

FOREST RESEARCH

The Forest Service conducts research on problems pertaining to all forest land and on the management of related non-forest rangelands, including State and private holdings as well as national forests and other Federal lands.

The research is carried on primarily at the Forest Products Laboratory, Madison, Wisconsin, at ten regional forest and range experiment stations in the continental United States, and at a forest research center in Puerto Rico. Much of the research at the regional stations is concentrated at laboratories and at field research centers including experimental forests and ranges where major problems may be studied advantageously.

The research is to a large extent cooperative with States and private agencies. The following fields of research are under way:

Forest and Range Management Research

Current Activities: Research under this activity is concerned with the growing of timber and the management of forest properties, the management and efficient use of range forage, the management of both forest and range vegetation to produce the greatest amount of usable water and to minimize erosion, and the management of forest recreation resources.

Forest management research emphasizes the development of methods for quickly increasing the growth rate of forests and hence the permissible annual cut. Emphasis is given to harvest cutting patterns that promote regeneration of the forest or increase growth and quality of residual stands. Also being stressed are measures leading to control of undesirable vegetation competing with crop trees. Methods of reforesting farm lands withdrawn from cultivation, stripped mining lands, and cut or burned-over forests, are being improved through research. The development of hybrid trees for faster and more certain timber production is being studied, as well as improved methods for stimulating gum flow in pines for the production of resin.

Wildlife habitat and range management research emphasizes development of methods and practices for building up or maintaining forage production on forest and related non-forest ranges, and for its efficient utilization by game and livestock, at maximum levels consistent with other values of land for watershed, recreation, timber production, or other uses. Emphasis is being placed on determination of proper intensities of stocking, systems of grazing, and seasons of use for native ranges, seeded ranges, and ranges on which undesirable plants have been controlled. Methods are being developed for coordinating livestock and big game use of the same ranges. Studies are also under way on the use of fire in the control of undesirable range plants, and the development of methods for restoring and managing desirable forage plants on game ranges.

Watershed management research is directed toward improving soil and cover conditions and practices to alleviate flood and sediment problems associated with the use of forest and related range land, and toward helping meet urban, rural, and industrial demands for water of good supply and high quality. Watershed use problems are attacked by obtaining quantitative measurements of the effects of such activities as fire, logging, grazing, and road construction on water supply and quality. Concurrent with these studies are those to determine how to use watersheds for various economic purposes and still provide satisfactory water supplies. Possibilities of increasing water yield through manipulation of the vegetation and control of snow accumulation and melt are being studied. Particular attention is being given to the effects of watershed use and management on study areas as they are reflected in soil-plant-water relations. This provides both an understanding of the cause and effects of given measures and a means of predicting the magnitude of results from applying watershed use and management measures on other areas.

Forest recreation research concentrates on developing basic facts on forest recreation and providing guidelines essential to the forest land manager in making policy and program decisions. This research includes studies of the resource, the people who use it, and the relation of recreational use to other uses of forest land. Major emphasis is placed on: devising techniques for measuring and classifying forest recreation use, and for inventorying forest recreation resources; investigating factors influencing incentives, desires, and choice of recreation activity by the recreationist; improving procedures for making projections of future recreational use; determining methods for management, protection, and rehabilitation of the recreation resource; developing guides to determine carrying capacities of various types of recreation resources; and on studies in coordinating recreation with other forest uses, and evaluating effects of other forest uses on forest recreation values.

Selected Examples of Recent Progress

Forest Management Research

Pioneering research unit established. A pioneering research unit in forest mensuration was established at Berkeley, California, to conduct advance research in forest mensuration, which is concerned with the measurement of the spatial arrangement, form, volume, growth, and quality of forest stands and trees.

How springwood and summerwood are formed. The light and dark portions of annual rings in wood represent, respectively, fast-growing springwood (large diameter cells) and slower-growing summerwood (small diameter cells). For the first time it has been shown that day length, by its control of auxin production in the terminal bud, is responsible for the change from one kind of growth to the other. In a series of experiments, the change from springwood to summerwood formation was reversed by either changing the day length to which the tree was exposed or by supplying auxin artificially to the tree. This is a

major scientific breakthrough and has important practical implications because the proportion of springwood and summerwood largely controls wood density, which in turn determines most of the strength properties of wood in use.

Turpentine used to study carbon 14 distribution. Forest Service scientists cooperated with atomic scientists at Los Alamos in a project concerning the distribution of carbon 14 in nature--from primitive times, through the industrial revolution, to the present. Measurement of radioactivity of turpentine recovered from old pine stumps reveals how much carbon 14 was in the atmosphere when the pines were alive and growing. The study has led to techniques useful in detecting changes of carbon 14 in the atmosphere.

Some nutrients redistributed in trees. Redistribution of essential elements in trees helps to compensate for the low fertility of many forest soils. Controlled experiments in mineral nutrition of loblolly pine conducted in sand culture have revealed that potassium in the tree moves from the lower needles to the growing points when potassium is withheld from a treatment solution. Magnesium also moves to the upper needles. Calcium, however, is immobile and is not translocated from older needles to new needles. This redistribution not only is important in tree nutrition but also must be considered in sampling foliage to determine the nutrient status of the tree.

Site requirements for important timber trees defined. Progress continued on a nation-wide series of studies designed to isolate and identify critical characteristics of soil and site that strongly influence growth of important timber trees. The results of this research will now provide the basis for charts and other easily used standards for evaluation of the productivity of a site, and for guides to selection of the best species for a given area.

Controlled flooding reduces hardwood losses. Inadequate soil moisture during drought years kills or damages cottonwood, sweetgum, willow, and other hardwoods throughout the South. From experiments in central Mississippi it has been learned that impounding water from fall and winter rains is probably one of the best means of alleviating water shortage on the large flat areas of slowly permeable soils. Six to twelve inches of water impounded in September or October and drained in April will increase the amount of stored soil moisture and benefit hardwood growth. However, the sites must be drained promptly in the spring to avoid tree damage.

Managing hardwoods for timber and waterfowl. Winter flooding also has real promise for dual-purpose management of bottom-land hardwood stands along the Central Mississippi Flyway for timber and game crops. A 4-year study in pin oak stands in southeastern Missouri has shown that: (1) Pin oak trees survived the fall-winter flooding necessary for shooting area development, (2) flooded areas produced more sound acorn mast than the non-flooded areas,

(3) natural regeneration of pin oak was much lower on the flooded area, probably because most of the acorns were consumed by the ducks, (4) flooding may have to be discontinued for 1 to 3 years when it is time to regenerate the stand, and (5) wildlife management objectives and timber management objectives for such areas are compatible.

Pine pollen stored for 15 years. Successful hybridization of many forest trees requires storage of pollen. In order for scientists to use identical germ plasm in their breeding experiments year after year, it is highly desirable to be able to store pollen for a long period of time, which could result in a decline in pollen viability. At the Western Institute of Forest Genetics the correct combinations of humidity and temperature have been worked out for long-term storage of pollen of several pines. The pollen of all but one species was still viable after 15 years in storage at 10% relative humidity and at 0°C or 5°C.

Hardwood silviculture modified to favor yellow birch. The economic returns from managing the northern hardwood forest in upper Michigan can be increased greatly by increasing the proportion of yellow birch in the stands. This species is in great demand for veneer and the current stumpage price is more than twice that of sugar maple, the next most valuable species. Studies in northern Michigan showed that the yellow birch seed supply was usually adequate but that few seedlings became established in lightly cut stands. Silvicultural practices found most favorable for increasing the proportion of yellow birch in these stands are (1) reduction of the overstory canopy to let through about 50 percent of full sunlight, (2) scarification to expose mineral soil on at least 50 percent of the area, and (3) a salvage cutting 3 to 5 years after the initial cut to gradually increase the amount of light to maintain growth of established seedlings. These measures are a significant departure from the selection system commonly used in managing the tolerant species of northern hardwoods such as sugar maple.

Planting methods for dry pine sites in West. The relatively coarse, shallow and highly desiccative soil on steep irregular terrain, combined with low summer rainfall make severe planting sites in central Idaho. Until recently attempts to establish plantations of ponderosa pine on the large unproductive acreage of burned forest sites were largely unsuccessful. Now, a 5-year study on the Boise National Forest has demonstrated that successful plantations can be established with adequate site preparation and better handling and care of the planting stock. For example, 5-year survival averaged over 95% on an area prepared by stripping with a D-7 bulldozer and trenching with a Talladega plow, whereas it was about 12% on unprepared sites. Survival also was increased by using 2-1 stock, faster transportation from nursery to planting site, and planting in a dug hole rather than in a slit. The success of this planting method has stimulated renewed effort in planting pine throughout the ponderosa pine region.

Range Management Research

Effects of brush invasion on crested wheatgrass yield. General observation has indicated that yield of grass stands is reduced by invasion of shrubs. On the Benmore Experimental Range in Utah evidence now confirms this insofar as invasion of crested wheatgrass range by big sagebrush is concerned. However, this study also disclosed that a similar invasion by rabbitbrush actually increases production of crested wheatgrass. Scientists searching for the cause of these contrasting relationships have found a partial answer in the root systems of the two shrubs. Taproots of big sagebrush are frequently restricted by a calcareous hardpan or salt accumulation in the lower soil layers. When this happens, numerous lateral roots develop in the upper soil layers where they utilize all available soil moisture. Crested wheatgrass is unable to compete with sagebrush and barren "halos" develop at the perimeter of the shrub crowns. On the other hand the taproots of rabbitbrush are little affected by dense soil layers. The poorly developed lateral roots offer little competition to roots of crested wheatgrass in the soil zones where they draw moisture and the wheatgrass grows profusely under and adjacent to the rabbitbrush. The reason for the actual increase in yields under these circumstances is still under study.

Systems of range management evaluated. Comparisons of seasonlong grazing and a deferred rotation system in Oregon showed that during the first three years of the study cows and calves made better weight gains under seasonlong grazing. There was no measurable difference in effect on the range. In direct contrast, two-year steer gains in a Wyoming study were higher under a 3-pasture rotation system than under seasonlong grazing use. Both experiments are continuing in order to take into account a wider range of yearly weather fluctuations.

Growth inhibitors found in range plants. Recent research has found evidence that chemicals leached from plants by rainwater may exert an inhibiting effect on the growth of other plants nearby. In northern Arizona 20 native range plant species were found to contain chemicals that inhibited the growth of wheat seedlings used as laboratory test plants by more than 50 percent. Water extracts of grasses caused less inhibitory effect than those of forbs, shrubs and trees. Some species, such as junipers, produced inhibitory effects under field conditions whereas grasses did not. Although the presence of a growth inhibitor in a plant extract does not necessarily mean that it has ecological importance, this factor cannot be ignored when attempting to establish forage species on areas now or formerly occupied by species that produce inhibitors.

Recovery rate of deteriorated ranges varies greatly. Glades in the Missouri Ozarks have been overused by livestock for many years, and forage production has been greatly reduced. However, these ranges recover very rapidly when livestock are removed. In one typical

area herbage production increased from 400 pounds (dry weight) per acre to 2,800 pounds, a 600-percent increase, during 4 years of protection from livestock grazing. On the other hand, certain areas of subalpine range on the Manti National Forest in Utah still do not have an adequate cover of vegetation for soil stabilization after nearly 50 years of protection from grazing. This slow rate of recovery is attributed to unfavorable growing conditions, including low soil fertility, and is in sharp contrast to that on the Missouri glades.

Rodents greatly influence range vegetation. Recent observations and measurements on experimental ranges in Utah, Colorado and Nevada have established the fact that pocket gophers are a primary cause of plant cover deterioration. In the Utah area gophers were nearly twice as abundant and damage to perennial vegetation was much greater where an aspen forest had just been cleared than where the stand was undisturbed. Pocket gophers were excluded for three years from experimental plots on Black Mesa in western Colorado. The result was an increase in grass and litter cover compared to control areas where the gophers were unchecked. In big sagebrush areas in Nevada, protection from small herbivorous mammals for two decades has resulted in plant composition changes noticeably different from changes where livestock only were excluded. The most striking difference was in the greater percentage of perennial forbs that developed under protection from rodents. These results indicate the importance of considering rodents in the management of livestock range.

Wildlife Habitat Research

Big-game production closely related to range condition. A measure of the importance of good summer range for maintaining mule deer herd productivity has been obtained by a study in the Intermountain area. A herd on very good summer range produced 50 percent more offspring than a herd on very poor summer range. Winter ranges during the period of study were similar.

Advances made in ecology of bitterbrush, an important deer forage. Competition is an important factor in bitterbrush establishment and growth. On a good winter range bitterbrush site in California, plant vigor suffered where bitterbrush stocking was more than 2,200 plants per acre. In a test on range seeded to crested wheatgrass, it was found that for best results bitterbrush should be planted in the openings and wherever possible at least 2 feet away from any grass clump. Stand development of bitterbrush in central Oregon is closely associated with soil and topographic features. Stand development of bitterbrush improves as the soil deepens, soil texture becomes coarser, soil structure becomes less strongly developed, proportions of stones in the soil increase, indurated hardpans disappear, and as slope aspect changes to the South. Such information is valuable in achieving success in establishment and management of this important browse species.

Wildlife habitat improved by modification of the timber stand. Significant increases in understory vegetation of value to deer and upland game resulted from opening the timber stand by logging in Montana, from several levels of thinning in Louisiana, and from stand improvement work in the Central States. Such increases, particularly in shrubby species, improve the habitat and can also be expected to reduce animal damage to timber reproduction.

Watershed Management Research

San Dimas experimental forest fire and rehabilitation. The San Dimas Experimental Forest in southern California was almost completely burned over by wild fire in July of 1960. With the assistance of a supplemental appropriation and cooperative assistance from the county of Los Angeles and the State of California, work at this important laboratory has been reestablished. Going studies have been reactivated and new studies started. Thirty-six small experimental watersheds have been instrumented and treated to find the best means of stabilizing these highly erosive slopes following the destructive wild fires prevalent in the region.

An illustration of the instability of soils in the southern California mountains, can be cited in one 100-acre undisturbed watershed where erosion prior to the fire amounted to about 900 cubic yards per square mile per year. Following the fire, erosion from this watershed from the first storm of about 1 inch was 3,260 cubic yards per square mile--more than 3.6 times the prefire annual rate.

Soil erodibility related to origin and development. To develop a better understanding of the processes and factors of erosion of soils, a study in northern California related erodibility to geologic type, vegetation type, elevational zones, and geographic zones. Soils with particularly high erodibility were the acid soils in the central coast area, those from soft sediments in the Sierra, and those from soft sediments developed under brush in all zones. Soils developed under brush were 30 percent more erodible than those developed under grass. Soils developed at the lower elevational zones below 1000 feet were 44 percent more erodible than soils developed at higher elevations. Studies of the detailed characteristics of these soils are continuing to learn the reasons for their erodibility.

Mature forest removal increases streamflow. Summarization of 11 forest cutting experiments over the past 20 years at the Coweeta Hydrologic Laboratory, North Carolina, located in the high precipitation zone of the southern Appalachian Mountains, has shown that conversion of mature hardwood forest to low-growing vegetation has increased streamflow in amounts varying from 5 to 16 inches per year. Increase has been roughly proportional to the percentage of the stand cut. Increases for other areas are not yet quantitatively predictable due to variations in soils, physiography, and orientation of small drainages.

Water yields also increased in relation to severity of cut from four West Virginia watersheds harvested under intensities ranging from commercial clear-cut to light selection. The maximum increase (resulting from the commercial clear-cut) amounted to 3.7 area-inches the first year following the cut, declining to 2.1 area-inches the following year as a result of sprout regrowth.

Pine thinning reduces evapotranspiration losses. First-year data from heavily thinned and undisturbed portions of a loblolly pine stand in South Carolina showed that thinning caused a reduction in evapotranspiration by at least 50 percent. This lesser use of water by trees resulted in more water released as surface runoff from the thinned plots over that from the unthinned. Water recharge of the soil profile continued throughout the growing season at depths greater than four feet under both conditions.

Forest Recreation Research

Aerial photos useful in measuring recreation use. From studies made at several recreational sites in the wildland areas of California it was determined that aerial photographs, flown to special specifications, can be an aid in estimating the intensity of recreational use. For this special purpose: (1) oblique photos should be taken rather than verticals; (2) flight altitudes should be close to the terrain rather than high above it; (3) helicopters should be used as camera platforms rather than fixed wing aircraft; (4) orthochromatic film should be used rather than panchromatic; and (5) blue light should be exposed for rather than excluded.

A study of the effects of heavy use on soil and vegetation in campgrounds was made on the national forests in California. Observations showed that the cumulative effect of years of trampling feet and auto traffic on the forest floor had been to create extremely adverse growing conditions. Compaction of soil plus direct physical injury to trees and shrubs had made campground trees and other vegetation easy prey of natural enemies. Broken, stunted plants became too weak to resist insects and diseases. Open wounds became entry ports for airborne spores of wood-decaying fungi. New growth on dwarfed trees stayed within reach of deer which browse off the succulent young twigs each year. The results of this study will serve as guidelines so that future recreation research projects can attack forest recreation use problems more effectively.

A study was made of nine highly-developed recreation areas in the Northeast. This study was undertaken to get a better understanding of the nature, scope, and importance of recreation problems in the Northeast. Results of this study indicate that the most immediate need is for research to provide information and criteria which can be used by officials responsible for making financial policy, and land-use decisions. Need for more ecological and engineering information seemed to be of less importance at this time.

Mapping of utilization on recreation areas. This was an exploratory effort to devise methods for measuring recreation use and the preferences of people engaged in forest recreation without using questionnaires. Results of the study indicate that the mapping technique can be used successfully with modifications and clarification of design. Further trials will be made of this method on the White Mountain National Forest, New Hampshire.

Forest Protection Research

Current Activities: This work includes research on the prevention or control of damage from fires, insects, and diseases in forests.

Research on forest fire is directed toward reducing fire losses, improving efficiency of fire prevention and control measures, and toward better techniques for using fire beneficially in forest and range management. Human attitude and behavior studies are laying the groundwork for improved fire prevention methods. Studies of thunderstorms and ways to reduce their fire-starting lightning discharges are continuing. How to predict fire behavior more reliably for better and safer fire fighting is being developed through intensive study of environmental factors that control the ways fire burns. New chemicals and other additives to water that improve its fire fighting efficiency are being developed and tested. Also under study are fire effects and how to achieve best results from fire use for hazard reduction--including slash disposal, modification or control of vegetation, seed bed preparation and other purposes.

Research on forest insects is directed toward the prevention or control of destructive insect attack on forests and forest products. Damage by insects enters into all phases of forest management from the seed to the mature forest. The development of effective and economical methods of direct and indirect control is dependent upon thorough knowledge of life histories and habits of forest insects, including the interrelationships between the insects and their environments. Investigations on direct control methods involve mechanical and chemical methods. Research on improvement of insect survey methods with particular emphasis on use of aerial photographs is an important phase of the work. Control of forest insects by indirect methods such as the use of natural or introduced predators and diseases of insects, and by silvicultural practices designed to prevent the buildup of insect epidemics, offers promise and is being emphasized in the research program.

Research on diseases in forests, forest tree nurseries, and on decays and stains of forest products provides the basic information on the causes of diseases and on practicable and effective methods of combating them. Studies are underway on the identification and life history of the pathogens that cause disease, on the environmental conditions that result in disease epidemics in forests, on direct control by chemical and mechanical methods, on indirect control through silvicultural practices and genetic resistance, and on the improvement of disease survey techniques. In the products field, research is directed to the determination of methods of handling logs and lumber to prevent fungus infection; of the proper use of naturally durable or treated wood in high-hazard locations; and of improved structural design to reduce decay of wood in service.

Selected Examples of Recent Progress

Forest Fire Research

Fire information from laboratory studies for better control. Experimental burning of simple sugars and pure cellulose paper at Berkeley, California, gave new insight into the flame-inhibiting action of certain chemical salts used as fire extinguishers. It was shown that some of these salts actually increase the rate of pyrolysis and combustion reactions in the "glowing" stage. This results in the burning of fuels with little or no flaming. Analysis of wood crib fires at the Southern Forest Fire Laboratory in Macon, Georgia, indicates an exponential relationship between the density of wood fuel and the rate of fire spread. At Asheville, North Carolina, mathematical analysis shows that methods for computing the ember-lifting capacity of a fire convection column are different for various heights above the combustion zone. This means that prediction of large-fire spotting phenomena from measurements of laboratory-scale fires must take into account the relatively low column heights (in the laboratory) with respect to the intensity of fire.

New knowledge of fuels for pre-fire planning. Studies of logging slash fuels in Idaho reveal that greatest reduction in flammability occurs during the first year after cutting; but that after weathering for 5 years all but the lightest slash concentrations (less than 7.5 tons per acre) still supported fire which spread at moderate rates and burned with considerable intensity. Data collected in southern California watershed areas demonstrate that moisture content of living brush fuels in that area is closely related to soil moisture at root level. On the other hand, similar studies of living undergrowth fuels in the coastal plain and Piedmont areas of eastern United States show that moisture content displays strong seasonal variation, but appears to be unrelated to soil moisture or water table level. The difference in these results emphasizes need for continued search into physiological processes which bear directly upon flammability of living forest fuels.

New information on lightning and people for more effective fire prevention. Investigations, jointly supported by the National Science Foundation and the Forest Service, do not yet demonstrate conclusively that seeding clouds with silver iodide results in reducing lightning phenomena. Observations during 1960, however, strongly suggest that such seeding will be proven successful at the completion of current tests. In California, exploratory study of psychological effects of fire law enforcement showed that most people--even those who recognize the importance of fire laws--find it difficult to obtain enough information to keep from breaking the law. In addition to this, the study revealed a general lack of awareness of fire laws by many violators. Evidence of these findings was borne out in test interviews which showed that 40 percent of the people did not know that burning permits are required for trash burning on forest areas. Many also believed that a U. S. Forest Service burning permit was valid on State and private forest land.

Fire danger rating methods are improved. Two new indices were developed and put into use this year in California. One of these expresses the effect of weather on the ignitability of forest fuels; the other combines the ignition index with a previously developed burning index to yield a single numerical expression of expected fire fighting load according to prevailing weather conditions.

At Macon, Georgia, formulae were constructed whereby three easily obtained weather variables (dew point temperature, dry bulb temperature, and wet bulb depression) can be used to compute the moisture content of standard fuel moisture slats almost as accurately as direct measurements from slats in field practice. In the critical lower fuel moisture range, use of the weather variables permits even more precise calculations. An estimating equation of this type is being made a part of the preliminary framework of the national fire danger rating system.

Modified retardants for more effective fire control. Tests continue to show that effectiveness of promising retardants, such as diammonium phosphate (DAP), is markedly increased on some fuels by using them with water which has been thickened with jelling substances. These jelling substances used alone or in mixture with calcium chloride have also shown retardant qualities both in the laboratory and on small test fires in the field. Both laboratory trials and field plot evaluations, however, indicated that unthickened DAP retardant solutions stopped litter fires better than thickened solutions at an application rate of 2 gallons per 100 square feet. This was due to poor penetration of the litter layer by the thickened material.

Retardants used in aerial attack. In cooperation with the California Division of Forestry and the Los Angeles County Fire Department, the U. S. Forest Service conducted air tanker tests to determine optimum viscosity for cascading jel retardants from the air. Preliminary results indicate that the best drop patterns can be obtained with jel at medium viscosities when the drops are made from altitudes of 100 to 175 feet.

In Georgia, aerial slurry retardant drops of 440 gallons or less failed to substantially penetrate hard-wood canopies in full leaf.

Weather and fuel factors are keys to successful controlled burning. In Oregon, experience with slash disposal fires shows that fuel moisture content is a more important factor than either wind or slope in the success of a slash-burning operation. When moisture content of dead hemlock twigs dropped below 14 percent, most of the fires thoroughly covered the ground and consumed nearly all limbs smaller than one inch in diameter and much of the larger fuel. Above this moisture content fires skipped many spots of slash and left many 1-inch limbs only charred.

Analysis of ten years' weather records in the Southeastern States shows that westerly winter winds are more persistent than other directional winds and consequently should be given more consideration in planning prescribed burning operations.

Forest Insect Research

Pine reproduction weevil attacks western white pines. Recent studies show that the pine reproduction weevil, a serious pest of young ponderosa and Jeffrey pines in California forests, may also attack and kill young white pines in plantations and nurseries. Up to now, white pines have been considered resistant to this insect.

Biological control of the European pine shoot moth. Progress is being made in efforts to secure more effective natural control of the European pine shoot moth, a destructive introduced pest of pine plantations in eastern United States. During the past year, the Forest Service, working in cooperation with specialists of Entomology Research Divisions, Agricultural Research Service, who are located in Europe, imported approximately 10,000 specimens of European parasites of this insect and liberated them in infested pine plantations in the Lake States and Central States. Follow-up studies will be made in these plantations to determine if these parasites became established and to evaluate their effectiveness in control.

Resistance of wire insulation materials to termites. Progress is being made in studies to determine the resistance of various wire insulation materials to termite attack. For example, sheets of polyethylene exposed continuously to heavy termite populations have remained almost free of damage for at least 8 years. Some test samples of coal tar pitch-impregnated fiber conduit have resisted attack for at least 13 years under similar conditions.

Aerial survey techniques. Recent studies in the Northwest show that epidemic mortality of Douglas fir caused by the Douglas fir beetle can be evaluated effectively by aerial photography during the first year of tree killing by using either color or panchromatic film. Epidemic mortality of ponderosa pines caused by the western pine beetle can also be estimated satisfactorily by aerial photographic techniques. Here, however, better results are obtained through the use of either color or camouflage detection film than panchromatic.

Control of the Texas leaf-cutting ant. Recent studies in Louisiana indicate that past failures in obtaining satisfactory control of this insect by methyl bromide fumigation have resulted from failure to inject the fumigant deeply enough in the ground. It now appears that the fumigant must be released at least 30 inches below the surface to secure maximum effectiveness in control.

Gypsy moth parasites survive in areas intensively sprayed with DDT. Studies made recently on Cape Cod show that many species of parasites of the gypsy moth have survived in oak woodlands intensively sprayed by airplanes with DDT for at least 10 years. These parasites were introduced from abroad and liberated in gypsy moth-infested stands many years ago.

Biological control of the spruce budworm. Analysis of results of a five-year program of studies of the effect of parasites on spruce budworm populations in the Lake States suggest that budworm populations do not increase in stands where aggregate parasitization affects 60% or more of the budworm larvae. This finding is not greatly different from findings made earlier on the effects of aggregate parasitization of the budworm in the Northeast and Pacific Northwest.

Protection of slash pine cones from insect damage. In northern Florida two species of insects belonging to the genus Laspeyresia often attack maturing slash pine cones and damage them considerably. Recent studies indicate that these cones can be given a considerable degree of protection from the insects by spraying them in the spring with a water emulsion of Guthion. In a stand where over 90% of unsprayed cones were damaged by these insects, less than 10% of those receiving the spray were damaged. This method of control has great promise for seed orchards and other areas where seed production is critical.

Effect of hard pine resin vapors on bark beetles. Recent research in California on the toxicity of hard pine resin vapors to newly-emerged adults of the mountain pine beetle, Jeffrey pine beetle, and western pine beetle indicates that these beetles can only tolerate the saturated resin vapors of their native hosts. This suggests the possibility that resin quality is an important factor governing the susceptibility or resistance of these pines to bark beetle attack.

Forest Disease Research

Almost perfect control of cone rust, a serious disease of slash pine caused by Cronartium strobilinum, was obtained with four sprayings of ferbam. In the untreated slash pine checks 15% of the cones were rusted and their seeds ruined. The four experimental sprays were each timed closely to precede forecasted 18-hour or longer periods of 85% or higher relative humidity. Such weather conditions had previously been found to favor cone infection and high counts of the infective spores produced on leaves of the alternate host oaks.

Maple blight on the wane. Severe insect defoliation, plus freezing injury to buds not hardened off in the fall because of a late reflush of growth following insect defoliation, is now believed to be the underlying cause of this disease localized since 1957 in a small area in Wisconsin. No primary pathogen has been found associated with the disease nor has there been any evidence of spread out of or intensification within the original infection area; on the contrary, the general picture is one of recovery of hard maples in the affected area.

Dwarfmistletoe has severe impact on lodgepole pine. Data from 18 stands in Colorado ranging from 50 to 150 years of age showed that tree heights and diameter growth, and merchantable cubic-foot volume were all substantially reduced by mistletoe attack. Impact as measured by any of these three factors increases with increased length of time the trees have been infected. During a 60-year period, mortality and growth loss induced by dwarfmistletoes reduced merchantable volume to zero.

White pine blister rust sustained by dew alone. To determine if dew alone provides sufficient moisture for development of white pine blister rust on ribes leaves, inoculated bushes were exposed to moisture in the form of dew only during the months of June and July in a typical stream bottom in northern Idaho. Moderate to heavy infection developed. By mid-July, teliospores had been produced and sporidia discharged, providing ample evidence that dews developing along valley bottoms in the Inland Empire provide enough moisture for the maintenance and development of the rust on ribes.

Brown spot needle blight of long-leaf pine was effectively controlled during the growing season following late June treatment of seedlings with the semicarbazone derivative of cycloheximide at 22 ppm. Phytoactin, another antibiotic, was ineffective at 200 ppm. Continued evaluation of the older method of treatment with bordeaux for the first three years after planting showed that a single spray application per year gave sufficient disease control to significantly increase the proportion of seedlings making height growth. Two sprays a year were even more effective, but four sprays per year were not appreciably more effective than two.

Forest Products and Engineering Research

Current Activities: This work includes forest products utilization research and forest engineering research.

Forest Products Utilization Research. The aim of the forest products research program centered at the Forest Products Laboratory and with field projects at the various regional forest and range experiment stations is to contribute to the solution of national, regional, and local utilization problems of all types; to reduce unused woods and mill residues to a minimum by finding uses for present residues; to develop new products; and to improve the serviceability and lower the costs of existing products. Its broad aim, in brief, is to develop new utilization outlets for thinnings, unpopular and little used species of timber, logging and milling residues, and to make the whole timber crop on farms and other forest lands go further and give better service in a wide variety of uses for lumber, paper, chemicals, and other products derived from wood.

Forest Engineering Research. The aim of the forest engineering research program is to advance the efficiency and mechanization of forestry operations. The application of sound engineering principles to timber production requires research into each operational phase in managing, harvesting, and renewing forests, and the mechanization of each phase. Emphasis is placed on study of logging equipment, logging methods, log handling processes, and methods of processing to upgrade the quality of products. Forestry engineering research also includes studies of mechanization to improve forest range practices; fire, insect, and disease control; and better methods of watershed management.

Selected Examples of Recent Progress

Forest Products Utilization Research

Western timber industry joins in research on wood quality. The lumber and plywood industries have agreed to contribute over $300,000 during the next three years to accelerate research by the Forest Service on strength properties of western species. The urgency of this work results from recent expansion in utilization of many formerly little-used western species for structural purposes. The objective of the studies is to provide research-based factors for use in engineering computations. The West Coast Lumbermen's Association, the Western Pine Association, and the Douglas-Fir Plywood Association have joined together to sponsor this work.

Log grades for southern pine. More accurate estimates of the value and yard-lumber outturn of southern pine logs can be made by the use of an improved log grade system recently adopted as standard by the Forest Service. This system is the result of extensive research conducted in Mississippi, Georgia, Texas, Florida, Arkansas, and South Carolina. Further research on evaluation of southern pine will be directed toward the development of methods of estimating total value and product outturn of standing trees.

Slicewood. Efforts to reduce wood losses due to saw kerf in lumber production include studies of slicing. Thick veneers up to 1/2 inch have been sliced successfully and their utility evaluated in a number of products. Manufacturers of wood processing machinery are interested in this development but, as yet, none have independently started detailed design and production of a commercial machine. Possibilities of joint sponsorship are being explored.

Stabilized gunstocks. A process to stabilize wood dimensionally has been developed. Its cost is likely to inhibit its use except for high-value specialty articles such as sculptured wood and gunstocks. The new process will not only greatly improve the performance of wooden gunstocks and allow their manufacture from lower quality wood, but it will also lower cost of seasoning and reduce degrade. One small industry in Minnesota has developed a healthy "do-it-yourself" business in stabilized sculptured products, gunstocks, and similar devices based on this research development. Its use is expected to spread rapidly.

Cellulose nitrate for propellants. A research program, costing over one-half million dollars, in cooperation with defense agencies and extending over an 8-year period, on cellulose nitrate for military propellants was finished. This work involved studies on methods of characterizing pulps for use in cellulose nitrate manufacture; on kinetics of reactions; on methods for evaluating the stability of the cellulose nitrate; and on properties of cellulose nitrate at low temperature. This work has resulted in 8 major publications and one application for patent on an improved process. With the completion of this work the men involved have been assigned other studies in cellulose chemistry.

A new concept for making strong papers. A new concept for making strong paper from combinations of long-fibered softwood pulp and short-fibered hardwood pulps has been developed. Present methods usually involve working the long fibers to a point where the ends are frayed and small fragments developed, with the short-fibered hardwoods being used chiefly as a filler. It has been demonstrated that better pulps with high tear resistance (associated with long fibers) and good puncture resistance (formerly acquired by breaking down the long fibers) can be made by lesser working of the long fibers and added working of the already short hardwood fibers. This should not only result in better quality paper but should promote added use of low-value hardwoods.

Defects found by ultrasonic sound. In the seasoning of rough maple shoe lasts, drying defects that cause internal voids known as honeycomb sometimes occur. Unfortunately, these defects generally are not uncovered until the final machining of the shoe last blanks, causing considerable economic loss in wasted time and labor. Research was carried out at the Forest Products Laboratory to develop a nondestructive technique that could determine honeycomb in the shoe last blanks, preferably just after they are dried. These experiments have demonstrated that ultrasonic sound waves can be used to detect honeycomb in the rough lasts. Ultrasonic sound, which travels in well-defined narrow beams, can be directed through the shoe lasts. The sound waves pass on through the solid lasts, but in those with honeycomb the waves dissipate when they reach the voids. The results of the experiments showed the method to be 100 percent effective in locating such defects.

High-grade sliced veneer from southern pine. Experiments at the Forest Products Laboratory revealing that high-grade southern pine logs make excellent sliced veneer have added new importance to the southern pine industry. Research has found that southern pine logs with a uniformly slow growth were more desirable than fast-grown stock and that the best veneer slicing was accomplished with flitches heated at 180 degrees to 200 degrees F. Flat- and quarter-sliced veneer was cut from selected southern pine logs and dried in a roller conveyor dryer according to drying schedules developed at the Laboratory. Experimental panels were fabricated and installed in the Forest Service Escambia Experimental Forest Building at Brewton, Alabama. Flooring strips of plywood faced with 1/8-inch-thick quarter-sliced southern pine were made and installed in an office in the Forest Products Laboratory. Both the panels and the flooring have performed well. Architects and American consumers have expressed a liking for the light color and general appearance of the southern pine face veneer, which lends itself to both old and modern design. Furniture manufacturers, too, are finding that plywood faced with southern pine veneer has wide application in their field.

Wood pole study completed. The largest sponsored research project ever tackled by the Forest Products Laboratory, a comprehensive seven-year study of wood poles, has been completed. Coordinated by the American Society for Testing Materials, more than 45 agencies, including pole producers, pole users, and interested public agencies, contributed more than $400,000 to carry on this research. The overall purpose was to improve the safe and economical utilization of wood poles. Studies involved eight of the most important species. They yielded valuable information on the effect of size of pole, spiral grain, frequency and size of knots and other factors upon the strength of wood poles. This research also showed that the two standard tests for full-sized poles -- the machine and crib methods -- yield comparable results except for large poles. A significant correlation of strength of full-size poles and of representative small, clear wood specimens was found. This should now make possible the development of acceptable design stresses for other species without the need for making tests of full-sized poles. A complete report of findings was published by the ASTM. It will form the basis for developing improved standards for poles as well as for engineering design of pole structures.

Forest Engineering Research

Helicopter logging. Research was begun to determine the feasibility of helicopter logging in the Northwest and Alaska. A preliminary survey of the problem and the factors influencing logging by air indicate that coastal Alaska may offer the best opportunity for success in competition with alternate logging methods.

Logging roads. "Logging Road Handbook - The Effect of Road Design on Hauling Costs" was published. This handbook enables engineers to estimate the effect of road geometry and character of surface on the cost of hauling logs by motor truck and trailer.

Transport of chips. The feasibility of transporting pulp chips in pipe lines in the Rocky Mountain area is under study. An analysis of the state of present knowledge and experience was completed and the major engineering aspects of the problem were determined.

Forest Resources Research

Current Activities: This work includes the nationwide Forest Survey, research relating to the marketing of timber products, and investigations of the economics of timber production.

Forest Survey. The nationwide forest survey provides basic forest resource facts by States or counties on the character and condition of forest land; the volume, quality, and location of standing timber; rates of timber growth and natural losses; the amount and kind of timber cut for forest products; and national consumption and prospective requirements for timber products. This information provides a basis for policies and action programs of public forestry agencies, forest industries, landowners, and many others having direct interests in forest resources.

Forest Products Marketing. Research in the marketing of forest products includes studies to increase the efficiency of harvesting, grading, selling, and distributing forest products, improved methods for providing price and market information for timber products, and development of expanded markets for timber species and materials in surplus supply. Such marketing investigations are of particular importance to the several million owners of farms and other small forest properties.

Forest Economics Research. Investigations of the economic aspects of forestry enterprises provide information on the profitability of producing various timber crops in different areas, the effect of ownership, taxation, and other economic factors on the practice of forestry, and possible means of reducing financial and economic obstacles to the growing and harvesting of forest crops. These studies thus provide economic guidelines for forest owners and timber industries, and in conjunction with other resource investigations furnish part of the facts needed for development of national and local forestry programs.

Selected Examples of Recent Progress

Forest Survey

Progress on forest survey. Forest surveys conducted in 14 States during the past year covered more than 70 million acres of forest land to determine the area and condition of forest lands, the volume and quality of timber resources, rates of timber growth and depletion, and the trends in timber supplies resulting from public and private forestry programs. Some 40 publications on forest resources and industries were issued during the year.

More pine, less hardwood in Arkansas. As an example of Forest Survey findings, a resurvey of Arkansas' timber resources shows a 30 percent increase in the volume of softwood timber, but nearly a 10 percent decrease in hardwood volume during the 9 years between surveys.

Except for large hardwoods, annual timber growth in Arkansas now significantly exceeds the annual cut. Increases in softwoods are attributed mainly to improved fire protection, conservative timber harvesting, and stand improvement to replace low-quality hardwoods with pine. Cutting and clearing of bottom lands for agriculture have been the primary reasons for the decrease in hardwood volumes. At the same time reversion of other abandoned farm lands to forest was responsible for a 7 percent increase in acreage of forest land during the 9 years between surveys. Timber from Arkansas forests now supports more than 1,000 primary wood-using plants -- mainly sawmills.

Stocking increasing in Michigan. Results of the second forest survey of Michigan show that nearly 20 million of Michigan's 36 million acres are forested. Between 1935 and 1955 pine areas increased more than a half million acres, largely as a result of planting. Striking increases also occurred in stocking of seedling, sapling, and pole-timber stands. Total areas of seedling and sapling stands has decreased by nearly a fourth while the area of pole-timber has increased. Sawtimber stands also decreased in area and now occupy about one-third of the forest land. Increasing growth and expanded acreages of forest land point to expanded timber supplies in the future.

New survey techniques. A training handbook showing basic techniques for aerial photo interpretation and measurements was issued during the year. A new method for determining stocking and condition of forest lands was developed to provide a basis for appraising future productivity and treatment needs. This involves use of clusters of ten variable radius plots at each field location to obtain information on timber volume and area classification.

Forest Products Marketing Research

Timber salvage by advance roading. Current mortality on some 3 million acres of old-growth Douglas-fir timberlands in the Pacific Northwest approximates one billion board feet annually. Recent studies indicate the practicability of constructing roads in such stands well in advance of final harvest. Interest, maintenance charges and depreciation on the capital outlay for these roads can be met by returns obtained from timber salvage. The principal factors affecting net returns from advance roading include such factors as timber quality and degree of stand decadence, species composition and volume, and the costs of salvage logging as affected by accessibility, salvable volume, and topography.

Trends in timber markets. Continuing studies of future timber markets included appraisals of wood use in housing, farm use of lumber in Minnesota, wood use in rural areas of Missouri, and use of wood products in school construction and in shipping industries. A comprehensive study of wood used in residential construction, for example, showed that of 170,000 single-family houses inspected during 1959 by the Federal Housing Administration, 75 percent were wood frame construction, 80 percent had nonwood exterior siding, and one-third were built on concrete slabs. These and related figures indicate significant changes in construction practices and wood use during the past decade.

Price determinants analyzed. Studies of prices paid for stumpage in the Northeast, Pacific Northwest, Southern and Southeastern regions have shown varied relationships between prices and the kind of timber marketed. An analysis of private sales of pine sawtimber in South Carolina, for example, showed that stumpage prices received generally were closely correlated with average volume per tree, road distance from tract to mill, number of bids received, and geographic location of sale area.

Forest Economics Research

Forest development possibilities in the Southeast. An analysis of potential timber supplies and possibilities for forest industrial development in the southeast river basins, a 90,000 square mile area in Georgia and surrounding States, was prepared for the United States Study Commission, Southeast River Basins. Forest lands capable of producing commercial timber total some 38 million acres in the area. With "prospective" management, annual timber growth in the Basins may be expected to increase from 1.3 billion cubic feet in 1960 to 1.5 billion in 1975 and to 1.9 billion cubic feet in the year 2000. This projected growth by the year 2000 could support more than twice the present output of pulp and paper and certain other industrial forest products. Potential employment in harvesting and manufacturing forest products in the Basins could increase from 114,000 workers in 1958 to 172,000 by the year 2000. With "high level" management, production, employment and product values could be substantially higher.

Planting in the South. Preliminary guidelines were developed for judging investment opportunities in planting loblolly pine in the South under varying conditions of initial land cost, site productivity, stand establishment costs, cutting schedules, and stumpage prices. Estimated returns on investments in planting in many areas will range from 6 to 15 percent. The wide range of returns possible underscores the need for careful appraisal and ranking of forestry alternatives.

Forest Research Construction

The research construction program authorized by the Congress for fiscal year 1961 is nearing completion. Forest insect and disease laboratories at Corvallis, Oregon and near Durham, North Carolina are in advanced stages of construction and will be ready for occupancy by the spring of 1962. The Stoneville, Mississippi forest management and insect and disease laboratory is scheduled for completion by late winter of 1962. A small silviculture laboratory at Marquette, Michigan is nearing completion. Preliminary planning and architectural designing for the facilities included in the construction program authorized for fiscal year 1962 are under way and all projects are on schedule.

STATE AND PRIVATE FORESTRY COOPERATION

Current Activities: This program, for the most part carried on in cooperation with the States, encourages private timber growing through assistance in preventing and suppressing forest fires, reforestation of denuded and poorly stocked areas, and good management of woodlands. Privately owned forest lands comprise three-fourths of the Nation's commercial forest area and produce 85% of all timber cut. The fire control program applies to all State and private forest lands within the boundaries of organized protection units. The balance of the program is concentrated on small forest properties in private ownership because (a) more than half of the commercial forest acreage is in small holdings averaging only about 60 acres each, (b) the small-owner group comprises 99% of private forest owners, and (c) present cutting practices are poorest on these small properties.

Recent Progress and Trends

Cooperative Forest Fire Control

During calendar year 1960 fire protection was provided for an additional 2 million acres reducing the unprotected area to approximately 32 million acres. The need for adequate protection for this remaining area is evident as more forest land was burned on the 32 million unprotected acres than was burned on the entire 403 million acres under organized protection. There was a reduction in the number of forest fires from the previous year but the burned area was larger. State and private expenditures for fire protection increased about $2 million. The Federal contribution was not increased during fiscal year 1961 but the 1962 appropriation provided an additional $2,345,000 for this program.

The State of Kansas and the Secretary of Agriculture completed an agreement for cooperation in forest fire control during 1961. Kansas became the 49th State in the program. Only Arizona now provides no organized protection for State and private forest lands.

New instructions for collection, compilation, and reporting of forest fire statistics were prepared in rough draft for field review and preliminary training. This deals primarily with a national compilation of more meaningful forest fire statistics as recommended in the Battelle Report of 1958.

Technical assistance to States included administrative management, equipment development and procurement, fire weather studies, interstate compact training, creation of fire movies for training purposes and for prevention use, and special fire prevention techniques.

Continued progress was made in Rural Fire Defense activities. A new simplified national method of determining total burnout following nuclear attack was developed. Assistance was given the National Rural Fire Defense Committee in the development of an operational plan for coordination of fire defense at State, county, and local levels.

The following table shows Federal allotments to States, and expenditures for cooperation in forest fire control on non-Federal lands:

	State and Private Funds Expended, F. Y. 1961	Federal Allotments, FY 1962[1/]
Alabama	$1,189,800	$397,400
Alaska	28,758	47,000
Arkansas	883,578	362,500
California	14,492,067	1,194,000
Colorado	123,203	47,000
Connecticut	154,673	56,600
Delaware	11,158	15,500
Florida	3,130,903	603,600
Georgia	2,687,626	581,700
Hawaii	20,699	25,000
Idaho	413,384	194,700
Illinois	186,241	66,900
Indiana	70,135	47,000
Iowa	49,049	40,000
Kentucky	646,090	180,900
Louisiana	1,723,511	458,300
Maine	1,141,736	333,700
Maryland	524,111	160,800
Massachusetts	407,914	136,600
Michigan	1,939,554	502,800
Minnesota	625,455	325,100
Mississippi	1,808,744	460,600
Missouri	758,067	271,100
Montana	540,436	142,100
Nebraska	8,287	9,000
Nevada	180,550	47,000
New Hampshire	178,233	91,400
New Jersey	409,852	139,600
New Mexico	82,376	47,000
New York	853,953	311,000
North Carolina	1,281,293	437,200
North Dakota	6,165	14,000
Ohio	316,456	122,500
Oklahoma	260,375	156,300
Oregon	2,893,475	579,600
Pennsylvania	757,330	253,900
Rhode Island	132,582	47,000
South Carolina	1,293,308	393,100
South Dakota	46,945	47,000
Tennessee	912,663	344,000
Texas	960,753	306,200
Utah	53,438	47,000
Vermont	56,382	47,000
Virginia	1,063,972	347,800
Washington	2,941,829	577,500
West Virginia	324,561	155,300
Wisconsin	1,747,686	443,700
Wyoming	22,618	35,000
Administration, Inspection, Prevention, and Special Services to States	- -	815,500[2/]
Grand totals	50,341,974	12,465,500

1/ While the amount available to a State may, if the allotment is small, exceed previous expenditures by that State, the actual payment to a State never exceeds State and private funds expended by or under the control of the State.

2/ Includes $4,100 allotment to be made to Kansas.

Cooperative Forest Tree Planting

The work authorized by Section 4 of the Clarke-McNary Act in the furnishing of forest and shelterbelt planting stock for use on non-Federal land continued in fiscal year 1961 to be an important activity. Forty-five State Foresters, three State colleges and the Commonwealth Forester for Puerto Rico cooperated in this work under agreements with the Department of Agriculture.

The number of trees shipped to landowners during each of the past five fiscal years in comparison with all forest and shelterbelt trees produced by public and private nurseries is as follows:

Year	State Cooperative Program	Other State Distributions	Total Output all Nurseries
1957	712,272,000	114,834,000	1,101,471,000
1958	764,364,000	377,274,000	1,554,692,000
1959	945,464,000	630,766,000	2,080,122,000
1960	844,599,000	522,830,000	1,918,746,000
1961 (est.)	850,000,000	350,000,000	1,700,000,000

The State and other nurserymen over the past several years have been increasing their efforts to improve the quality of their planting stock. This effort in recent years in particular includes improvements in the form, growth rate and other characteristics of the trees from which the tree seed is obtained. A significant number and acreage of seed production areas and seed orchards are being developed or planned for development throughout the country for this purpose. This effort should result eventually in improved timber stands.

Cooperative Forest Management and Processing

The following tabulation shows the accomplishments in Cooperative Forest Management and Processing for the fiscal year 1961:

Activity	Unit	Accomplishment
Owners given woodland management assistance	Number	89,254
Area receiving management assistance	Acres	4,612,957
Timber products sold or harvested	M.B.F.a/	495,325
Value of timber products sold or harvested	Dollars	11,775,948
Young timber saved from premature harvest	Acres	225,220
Owners referred to consulting foresters for additional assistance	Number	1,797
Area involved in above referral	Acres	432,926

a/ Thousand board feet

As shown in the above table this technical forestry assistance program is reaching annually about 89,300 woodland owners but this is less than 2 percent of the Nation's total.

This program now has 46 States and Puerto Rico cooperating. Only Alaska, Arizona, Hawaii, and Wyoming do not provide farm forestry service. In fiscal year 1961 there were 593 "service" or farm foresters. The States contributed $2,955,632 and the Federal Government provided $1,548,500.

In spite of increased State appropriations for this program and in spite of the increased accomplishments of private consulting and industrial foresters working with the small woodland owners, the combined existing forces are unable to keep up with present requests for assistance.

General Forestry Assistance

The Forest Service continued to give specialized forest management assistance to the Defense Department and to other Federal and State agencies, and to the Congress, forest industries, consultants and forest schools, by a few specialists working out of Forest Service regional offices, and in close coordination with State Foresters.

In fiscal year 1961 technical assistance in forest inventory, forest management and processing was given to 37 large private and industrial owners with holdings amounting to 5,786,000 acres; 31 State and local areas with 1,774,000 acres; and 8 Federal areas with 622,000 acres.

Work in rural development areas continued. In these areas where there is a surplus of timber and labor, new forest industries are being encouraged. Of the 458 counties listed in the rural areas development program, 295 counties have at least one half of their land in forest.

(b) Forest Roads and Trails

Appropriation Act, 1962 and base for 1963	$35,000,000
Budget Estimate, 1963	37,500,000
Increase	2,500,000

This appropriation provides for the liquidation of obligations incurred for the construction and maintenance of forest roads and trails pursuant to the authorization contained in the Federal Highway Acts of 1958 and 1960. Roads and trails are essential to protection and management of National forests, and utilization of their resources. An appropriation of $37,500,000 for 1963 will provide sufficient cash to liquidate prior year obligations, and obligations planned for fiscal year 1963 which must be paid by June 30, 1963.

Analysis of Cash Requirements by Activities a/

~~694,523~~ 29,300,377 / 43,465,899 × 10,827,475

	Actual 1961	Estimated 1962	Estimated 1963	Increase or Decrease
Construction of roads and trails	$23,308,925	$27,240,715	$28,870,000	+$1,629,285
Maintenance of roads and trails	7,786,590	8,732,645	8,630,000	-102,645
Total	31,095,515	35,973,360	37,500,000	+1,526,640

Authorizations for Appropriations a/

Fiscal Year	Construction	Maintenance	Total	Funded	Unfunded
1961	$22,000,000	$8,000,000	$30,000,000	$30,000,000	- -
1962	29,500,000	8,000,000	b/ 37,500,000	c/ 24,336,000	$13,164,000
1963	29,300,000	8,200,000	d/ 37,500,000	37,500,000	- -
Total	80,800,000	24,200,000	105,000,000	91,836,000	13,164,000

a/ The annual appropriation language and the Department presentation combine the appropriation for "Forest roads and trails" made pursuant to 23 U.S.C. 205 and the appropriation of 10% of forest receipts for construction and maintenance of roads and trails pursuant to 16 U.S.C. 501. This merger of funds is made in order to simplify the programing, allotment, and accounting of funds at the field level. Since the accounts for these two funds are merged it is not practicable to distribute obligations and expenditures between the two appropriations on a precise basis. The amounts shown for the "Forest roads and trails" appropriation are a proration based on the percentage that contract authorization used under the appropriated funds is of total available funds. Expenditure amounts for maintenance are based on all such obligations requiring cash payment during the fiscal year in which obligations are incurred.

b/ Consists of $35,000,000 authorization for 1962 plus $2,500,000 of the $40,000,000 authorization for 1963 made available for obligation in 1962.

c/ The 1962 appropriation of $35,000,000 less prior year unfunded authorization of $10,664,000 provides $24,336,000 for funding of the $37,500,000 authorization for 1962.

d/ Consists of $40,000,000 authorization for 1963 less $2,500,000 made available for obligation in 1962.

Status of Unfunded Authorizations

Unfunded contract authorizations beginning of 1962	$45,664,000
Appropriation, 1962	-35,000,000
New contract authorization, 1962 (1963 authorization available in 1962--Federal Highway Act of 1960, approved July 14, 1960)	+40,000,000
Total unfunded beginning of 1963	50,664,000
1963 Budget Estimate (cash requirements)	-37,500,000
Balance to remain unfunded as of June 30, 1963	13,164,000

Unfunded balance consists of obligations for which cash will not be required in 1963.

Analysis of Cash Requirements

1.	Unliquidated obligations June 30, 1961	$10,888,214
2.	Estimated cash requirements to finance 1962 program a/	25,085,146
3.	Total cash requirement by June 30, 1962	35,973,360
4.	Less cash on hand 1962	36,316,745
5.	Cash balance from 1962 available for use in 1963	-343,385
6.	Obligations in 1962 for which cash was not provided in line 2	13,507,386
7.	Estimated cash required to finance 1963 program b/	24,335,999
8.	Total cash required for 1963	37,500,000

a/ Based on 65% of new obligations (totaling $38,592,532) requiring cash payments during the fiscal year. This percentage is approximately in line with rate of cash payments in past years.

b/ Based on 65% of $37,500,000 of new obligations, or $24,375,000, but decreased by $39,001 to provide rounded appropriation.

* Raise to 75%

The following tabulation reflects the total program for the construction and maintenance of roads and trails on the national forests by combining the funds available under the appropriation "Forest roads and trails" with the permanent appropriation of 10% of national forest receipts. This permanent appropriation for Roads and trails for States (10% fund) is estimated at $11,600,000 for 1963 compared with $10,020,000 for 1962, an increase of $1,580,000.

PROJECT STATEMENT

Project	1961	1962 (estimated)	Increase or Decrease	1963 (estimated)
1. Construction of roads and trails	$32,638,424	$37,612,532	+$187,468	$37,800,000
2. Maintenance of roads and trails	10,827,475	11,000,000	+300,000	11,300,000
Total obligations	43,465,899	48,612,532	+487,468	49,100,000
Transfer from "Roads and trails for States"	-14,165,522	-10,020,000	-1,580,000	-11,600,000
Program under "Forest roads and trails" contract authorization	29,300,377	38,592,532	-1,092,532	37,500,000
Obligations incurred under unfunded contract authorization	+699,623	-3,592,532	+3,592,532	- -
Total appropriation or estimate	30,000,000	35,000,000	+2,500,000(1)	37,500,000

INCREASE

(1) An increase of $2.5 million to meet cash requirements for liquidation of contract authorization. This additional cash is required to:

(a) Pay for obligations of the prior year which will be due for payment in fiscal year 1963, and

(b) Pay the portion of 1963 obligations of $37.5 million contract authorization which will require cash payment in that year.

The net increase of $487,468 in total obligations provides no change in obligations of new contract authorization in 1963. It is comprised of an increase of $1,580,000 in funds available from the permanent appropriation--Roads and trails for States (10% fund) offset by $1,092,532, of the available contract authorization which was not obligated in 1961 but is planned for obligation in 1962.

Although the appropriation would be increased, the program resulting from this increase would remain at the 1962 level, since the 1962 obligation authority was also $37,500,000. The Federal Highway Act of 1960 provided contract authorization of $35,000,000 for fiscal year 1962 and $40,000,000 for fiscal year 1963. $2,500,000 of the 1963 authorization was approved for obligation in 1962. Therefore, only $37,500,000 contract authorization remains available for use in 1963

The rate of accomplishment proposed in the Development Program for the National Forests exceeds the existing authorization level. To permit the Forest Road and Trail program to come closer to the level of the Development Program, additional 1963 contract authorization of $10,000,000 is needed. Legislation is being proposed to increase the 1963 Federal Highway Act authorization to $50,000,000. If enacted, a supplemental appropriation would be necessary.

An increase of $10,000,000 in contract authority could be programed for essential road work in connection with the Development Program for the National Forests as follows:

Primarily timber access roads	$5,000,000
Primarily other purposes, such as fire and recreation roads and for bridge replacement	5,000,000
	10,000,000

An appropriation of $6,500,000 would be needed to provide sufficient cash to liquidate obligations that would be incurred by June 30, 1963.

STATUS OF PROGRAM

A system of roads and trails is prerequisite to the protection, management, and development of the National Forests and utilization of their resources. Under this program the existing system is maintained and additional roads and trails are constructed as needed to obtain the maximum practicable yield and use of the forest resources on a continuing basis. As of June 30, 1961 the system consisted of approximately 162,400 miles of access roads and 106,500 miles of supplemental foot and horse trails.

The system is maintained in part by the Government and in part by State and local road authorities, private cooperators, licensees, and permittees, and purchasers of Federal timber and other products. The table following shows how the system was maintained in fiscal year 1961:

	Roads	Trails
	(Miles estimated)	
By the Government	95,300	103,000
By others	67,100	3,500
Total	162,400	106,500

In fiscal year 1961 $10,827,475 was obligated for maintenance and preservation of the system and $32,638,424 for the construction of roads, trails, and bridges. In addition purchasers of Federal timber accomplished road construction having a value of about $44,239,036 and maintenance work costing about $4,282,452.

Construction accomplished in fiscal year 1961 was as follows:

	Units of Work Completed	
	By the Government	By Purchaser of Federal Timber
Roads	694 miles	3,525 miles
Trails	230 miles	- -
Bridges	313 each	26 each

(c) Access Roads

Appropriation Act, 1962 and base for 1963	$2,000,000
Budget Estimate, 1963	2,000,000

PROJECT STATEMENT

Project	1961	1962 (estimated)	1963 (estimated)
Access roads a/	$1,848,782	$2,151,218	$2,000,000
Unobligated balance brought forward	-1,000,000	-151,218	- -
Unobligated balance carried forward	151,218	- -	- -
Appropriation or estimate	1,000,000	2,000,000	2,000,000

a/ Represents obligations. Applied costs for 1961 are $1,818,782. The difference of $30,000 represents an excess of orders placed over orders received in that year.

STATUS OF PROGRAM

These funds are used to purchase, or to condemn if purchase negotiations fail, full or partial interest in existing roads or rights-of-way needed for access to National Forest areas so situated that other means of obtaining access are not practical or would not constitute an efficient expenditure of public funds.

Roads acquired in fiscal year 1961 will provide main stem access to about 7 billion board feet of National Forest timber. A total of 60 miles of heavy haul road in the Lewis and Muddy River areas in the Gifford Pinchot National Forest in the State of Washington and on the Placerville Working Circle in the Eldorado National Forest in California has been acquired at a cost of about $2 million.

As determined in a special study in 1960 access needs were important to a large number of National Forest management units in the Pacific Coast States, Montana, and Northern Idaho. Included were 185 such units containing more than 50 million board feet each. They involve approximately 4 million acres of National Forest lands on which there was an estimated 54.9 billion board feet of National Forest timber which could sustain an estimated allowable annual cut of 697 million board feet having an estimated annual value at 1960 prices of $11,600,000. This represents an amount equal to more than 8% of the fiscal year 1960 cut.

In these areas, road systems totaling 1,538 miles of road have been constructed by private industry to serve their particular holdings. It is estimated that the Forest Service should acquire 1,347 miles of these existing roads and also 1,938 miles of easements for roads yet to be constructed which will serve National Forest needs. The present estimated cost of the existing private roads is $21,585,000. Based upon the Government's share of the need for these roads proportionate to timber hauling use, the cost of acquiring the necessary interest would be approximately $12 million.

The estimated annual cut value of $11,600,000 involved in these access cases is somewhat more than the actual net loss in revenue because additional timber has been available in alternate areas. However, it is becoming increasingly more difficult to meet sale needs in this manner and it is now imperative that this timber be made available to meet industry needs and to avoid further timber losses from these stands.

Direct timber losses in inaccessible areas is difficult to measure. In the studied areas containing over 50 million board feet each, low losses were occurring in stands containing 2.6 billion board feet; average losses were reported occurring in 40.2 billion board feet; and high losses in 12.2 billion board feet. Insect losses were important in 7.2 billion, diseases in 1.4 billion, wind damage in .8 billion, overmaturity losses in 25.9 billion, and combined or from other causes in 8.7 billion. In some years losses approximate 2% of the volume. At this rate the annual loss would be about 1 billion board feet per year having a value of over $16 million. In addition there are other resource losses such as recreation values and the high cost of proper protection and management.

Negotiations in past years have been difficult. Success has been spotty. A few examples are as follows: Only after several years of difficult negotiations was an easement obtained over the Lewis River road on the Gifford Pinchot National Forest in the State of Washington. This access was acquired during the past year. Access into East Creek and the Little Nisqually areas on the Snoqualmie National Forest and the Muddy River on the Gifford Pinchot National Forest was gained only after the owners were notified that condemnation procedure would be initiated. Easements for the entire Agness road in Oregon has not yet been gained after obtaining rights-of-way from 40 owners of which 2 had to be obtained through condemnation. Efforts were started there in 1955. The Placerville road system on the Eldorado National Forest in California was obtained in 1961 after condemnation was scheduled. The Fisher River road system on the Kootenai National Forest in Montana and the Cedar River system on the Snoqualmie National Forest in Washington have been the subject of discussions and negotiations for several years and are only now reaching final stages. A recent court decision in a condemnation case in California provides access over the Summit Lake Road. This came about only after a difficult and lengthy series of legal actions. Access has been gained in these especially difficult cases only through very trying and difficult negotiations or use of condemnation action.

Negotiations are now well underway for acquiring easements over 382 miles of roads serving 18.4 billion board feet of National Forest timber in the National Forest areas of the Pacific Coast States, Montana, and Northern Idaho. Some of the more important and well-known cases included are the forementioned Cedar River on the Snoqualmie National Forest in the State of Washington which involves some 80 miles of road serving 840 million board feet of National Forest timber, the Calaveras system on the Stanislaus National Forest in California involving 72 miles serving 490 million board feet and the Fisher River system in the Kootenai National Forest in Montana involving about 80 miles serving 1,750 million board feet. Some 40 of a total of 56 rights-of-way on the 38 mile Agness road in the Siskiyou National Forest in Oregon serving 5,100 million board feet of National Forest timber have been obtained by negotiations or through condemnation.

While condemnation has many advantageous features and is often useful, it also has some disadvantages to the Government, particularly in the relationship with the owner of the road or land as well as the operating rules and conditions which must be agreed to under any joint use with the private owners. Cooperative construction and joint ownership under negotiated agreement which provide operating rules and maintenance provisions are much more satisfactory because it gives a flexible means of providing for not only the interest and needs of the owner but also for access to National Forest timber, other administration activities, and for other National Forest users at a minimum cost to the Government.

The present accelerated program of right-of-way procurement is geared to catch up with and then progress with the planned annual level of road system development. It is planned to reach that objective by the end of fiscal year 1963. However, the planned level of development can only reduce the annual losses. These losses cannot be fully eliminated until the entire National Forest road system is completed.

(d) Acquisition of Lands for Superior National Forest

Appropriation Act, 1962 and base for 1963	$250,000
Budget Estimate, 1963	2,000,000
Increase	+1,750,000

PROJECT STATEMENT

Project	1961	1962 (estimated)	Increase	1963 (estimated)
Acquisition of lands for Superior National Forest a/	$122,303	$878,496	+$1,121,504	$2,000,000
Unobligated balance brought forward	-799	-628,496	+628,496	- -
Unobligated balance carried forward	628,496	- -	- -	- -
Appropriation or estimate	750,000	250,000	+1,750,000(1)	2,000,000

a/ Represents obligations. Applied costs for 1961 are $48,194. The difference of $74,109 represents obligations for purchase of land on which title has not been finally cleared.

INCREASE

(1) The authorization of $2.5 million contained in the Act of June 22, 1948 (62 Stat. 568) as amended by the Act of June 22, 1956 (70 Stat. 326) has been fully appropriated. The Act of October 4, 1961 (75 Stat. 772) further amends these Acts to increase the authorization by $2 million to a total of $4.5 million for the purchase and condemnation of these lands.

The increase of $1,750,000 would be used to complete the wilderness canoe area purchases in the Superior National Forest. In addition to the approved properties now in the process of being purchased, there remain to be acquired some 14,700 acres of privately-owned land including 4 resorts, 45 cabin areas, and 54 unimproved properties. There are also some county-owned and State-owned unimproved properties that should go into Federal ownership.

It is imperative that the remaining acquisition be accomplished at the earliest possible date. Values of the remaining properties are increasing rapidly and monopoly value is developing on these remaining properties. The longer the acquisition is delayed, the greater will be their value which will result in a correspondingly greater ultimate cost to the Government. Further, the good faith of the Government is involved as owners who have already sold now complain that they would not have done so if they had thought the program would not be completed in an aggressive and timely manner. Commercial resort owners who have not sold are able to benefit through the valuable competitive advantage that now exists. In view of these factors it is in the interest of the public, in the interest of the economy, and in the interest of equity to former owners who sold in good faith, to complete this program during the fiscal year 1963.

STATUS OF PROGRAM

This appropriation is for the purchase of land pursuant to the Act of June 22, 1948 (62 Stat. 568), as amended by the Act of June 22, 1956 (70 Stat. 326), to preserve the unique qualities of the remaining wilderness canoe area in the Superior National Forest, Minnesota. The Act of June 22, 1956 extended the area to which the purchase directive applies and authorized additional appropriations.

As of June 30, 1961 the United States owns 733,213 acres of land in the Boundary Waters Canoe Area. During fiscal year 1961, 15 tracts totaling 530 acres were approved for purchase by the National Forest Reservation Commission. In addition the Commission conditionally approved the purchase of 14 other tracts containing 532 acres and comprised of 9 resort properties and 5 cabin sites with the improvements thereon. In addition to these approved cases there remain to be acquired in the Boundary Waters Canoe Area some 14,700 acres of privately-owned land including 4 resorts, 45 cabin areas and 54 unimproved properties. There are also some county-owned and State-owned unimproved lands that should come into Federal ownership, largely through land-for-land exchange.

(e) Acquisition of Lands for National Forests, Special Acts (Cache National Forest)

Appropriation Act, 1962 and base for 1963	$10,000
Budget Estimate, 1963	10,000

PROJECT STATEMENT
(On basis of available funds)

Project	1961	1962 (estimated)	Increase or decrease	1963 (estimated)
Acquisition of lands for Cache National Forest a/	$19,882	$122,520	-$112,520	$10,000
Unobligated balance brought forward	-122,401	-112,520	+112,520	- -
Unobligated balance carried forward	112,520	- -	- -	- -
Appropriation or estimate	10,000	10,000	- -	10,000

a/ Represents obligations. Applied costs for 1961 are $20,451. The difference of $569 represents prior year obligations for purchase of land on which title was cleared in 1961.

STATUS OF PROGRAM

Two appropriations are available for acquisition of lands in the Cache National Forest. A $10,000 appropriation is available from National Forest receipts under the Act of May 11, 1938, when appropriated by Congress. The Act of July 24, 1956 (70 Stat. 632) authorized additional appropriations not exceeding $200,000 for the same purpose. The sum authorized by the 1956 Act has been appropriated. Under the 1956 Act, funds appropriated must be matched by the contribution of funds or land by local agencies or persons.

Funds appropriated under each of these acts are being used to acquire lands within the Cache National Forest, Utah, which are critical from a watershed and erosion control standpoint to enable control and minimization of soil erosion and flood damage. These are private lands situated on the slopes of the Wasatch Mountains northeast of Ogden, Utah, where vegetative cover and watershed capabilities have been and still are being impaired through overgrazing and fire. Water from the mountain watersheds is vital to the cities, towns, and agriculture in the valleys. Heavy rains on these mountain areas have in the past resulted in serious floods accompanied by mudrock flows and excessive erosion of the damaged land. Public ownership of these critical lands has proven to be a necessary prerequisite to land restoration, and Federal and local governmental agencies are cooperating to this end.

In the fiscal year ending June 30, 1961, 1,227 acres were approved for purchase under these two acts. This brings the total acreage of lands purchased or approved for purchase under this program to 34,963 acres.

In excess of 10 thousand acres of the most critical type of watershed lands remain to be purchased. In addition there are some 85,000 acres of land in less critical condition but still in urgent need of acquisition, rehabilitation and protection.

(f) Cooperative Range Improvements

Appropriation Act, 1962 and base for 1963	$700,000
Budget Estimate, 1963	700,000

STATUS OF PROGRAM

Part of the grazing fees from the national forests, when appropriated, are used to protect or improve the productivity of the range, mainly by construction and maintenance of fences, stock-watering facilities, bridges, corrals, and driveways. These funds are advanced to and merged with the appropriation "Forest protection and utilization", subappropriation "Forest land management".

FORMULA FOR APPROPRIATION

Section 12 of the act of April 24, 1950 (Granger-Thye Act) provides that of the moneys received from grazing fees by the Treasury from each national forest during each fiscal year there shall be available at the end thereof when appropriated by Congress an amount equivalent to 2 cents per animal-month for sheep and goats and 10 cents per animal-month for other kinds of livestock under permit on such national forest during the calendar year in which the fiscal year begins.

The appropriation for this item since fiscal year 1951 has been $700,000, except for fiscal years 1954 and 1955 when $531,000 and $400,000 were appropriated. Since the actual use figures are not available until after more than one-half of the fiscal year for which funds are appropriated has elapsed, the 1963 appropriation request of $700,000 necessarily represents the best current approximation of the amount which will become available in the calendar year 1962 under the animal-months of use formula.

For calendar year 1960, the latest available figures, use amounted to 5,585,871 animal-months for cattle and horses; 6,902,173 animal-months for sheep and goats; and 3,960 for swine. This use under the 2 cents and 10 cents formula calculates to $697,026.

(g) Acquisition of Lands, Klamath Indians

PROJECT STATEMENT

Project	1961	1962 (estimated)	1963 (estimated)
Acquisition of lands, Klamath Indians	$68,716,691	- -	- -
Unobligated balance lapsing	309	- -	- -
Appropriation or estimate	68,717,000	- -	- -

The Act of August 13, 1954, as amended (68 Stat. 718; 72 Stat. 816), terminating Federal supervision over the Klamath Indian Tribe in Oregon, made provision for the sale of part of the Klamath Indian Forest in order to compensate Indians who elected to withdraw from the Tribe. The Third Supplemental Appropriation Act, 1961, approved March 31, 1961, provided $68,717,000 for this project.

STATUS OF PROGRAM

In fiscal year 1961, 525,585 acres were acquired and payment made as provided by the applicable legislation. This land is being administered as part of the new Winema National Forest, with headquarters at Klamath Falls, Oregon.

Payment transactions were completed late in fiscal year 1961 and no further action remains to be taken on this project.

(h) Assistance to States for Tree Planting

Appropriation Act, 1962 and base for 1963 ..... $1,000,000
Budget Estimate, 1963 1,000,000

PROJECT STATEMENT

Project	1961	1962 (estimated)	1963 (estimated)
Tree planting assistance (appropriation or estimate)	- -	$1,000,000	$1,000,000

STATUS OF PROGRAM

Planning and other work is progressing on this activity authorized by Title IV of the Agricultural Act of 1956. Work was first undertaken in 1958 with an appropriation of $500,000. No funds were appropriated in 1959, 1960 or 1961. The program was reactivated by an appropriation of $1 million for fiscal year 1962.

A total of 31 forestation plans presented by 25 State Foresters were approved as of December 31, 1961. These plans contemplate the forestation of 1,081,274 acres of land through planting, seeding, or site preparation and natural seeding at a total cost of $29,799,353. The Federal share is estimated to be $14,770,798 over a period of approximately 10 years. Twenty-three of these in 19 States with a planned forestation of 864,000 acres were originally approved in fiscal year 1958 when a $500,000 appropriation was available.

The States in which the 30 plans had been approved as of December 31, 1961 were:

State	Acres	Total Cost	Total Federal Share	Est. Payments in 1962
Arkansas	1,100	$16,698	$8,349	- -
Connecticut	23,400	444,600	222,300	$1,500
Florida	80,370	2,419,981	1,209,990	80,000
Georgia	16,405	379,591	189,795	8,981
Hawaii	9,000	1,151,000	575,500	20,000
Idaho	2,200	103,250	51,625	10,000
Kentucky	4,800	260,158	130,079	8,000
Maine	11,350	328,755	131,502	15,000
Maryland	2,572	74,710	37,355	5,000
Massachusetts	20,000	638,000	223,000	5,000
Michigan	233,821	5,147,003	2,573,501	140,000
Minnesota	88,800	5,073,520	2,536,760	150,000
Mississippi	151,000	2,743,530	1,371,765	17,226
Montana	5,500	185,000	92,500	16,000
New Hampshire	7,515	255,345	127,672	3,500
New Jersey	60,000	54,000	27,000	5,400
Ohio	7,500	267,000	133,500	25,000
Oregon	166,067	4,354,760	2,177,380	125,000
Pennsylvania	5,559	248,797	124,398	35,100
Rhode Island	30,000	1,500,000	750,000	3,000
South Carolina	35,000	818,860	409,430	74,879
Tennessee	9,100	264,170	132,085	20,320
Vermont	715	51,625	25,812	1,000
Washington	100,000	2,595,000	1,297,500	125,000
Wisconsin	9,500	424,000	212,000	35,000
Total	1,081,274	29,799,353	14,770,798	929,906

ADMINISTRATIVE PROVISIONS

CHANGES IN LANGUAGE

The estimates include proposed changes in the language of this item as follows (new language underscored; deleted matter enclosed in brackets):

Appropriations available to the Forest Service for the current fiscal year shall be available for: (a) purchase of not to exceed one hundred and [fifty] seventy-nine passenger motor vehicles of which one hundred and thirty-[five] seven shall be for replacement only, and hire of such vehicles; operation and maintenance of aircraft and the purchase of not to exceed [two] three of which one shall be for replacement only; * * *

The first and second changes in language would provide authority for the Forest Service to purchase 179 passenger motor vehicles of which 137 will be replacements. A complete justification of this need appears in the justification of estimates for motor vehicles.

The third change in language would provide authority for the Forest Service to purchase three aircraft of which one will be a replacement. While only one replacement is proposed in the language it is planned that other replacement aircraft will be obtained, as available, by transfer from another agency. A justification of these needs appears with the estimates for aircraft.

(i) Roads and Trails for States, National Forests Fund

Appropriation, 1962 and base for 1963	$10,020,000
Budget Estimate, 1963	11,600,000
Increase (due to an estimated increase in national forest receipts in fiscal year 1962)	+1,580,000

The permanent appropriation of 10% of national forest receipts pursuant to the Act of March 4, 1913 (16 U.S.C. 501) is transferred to and merged with the annual appropriation for "Forest Roads and Trails." The explanation of the use of these funds is included in the justification for that appropriation item.

The increase of $1,580,000 results from an estimated increase in receipts from sale of timber for fiscal year 1962.

(j) Expenses, Brush Disposal

Appropriation, 1962 and base for 1963	$9,000,000
Budget Estimate, 1963	9,000,000

PROJECT STATEMENT

Project	1961	1962 (estimated)	Increase or decrease	1963 (estimated)
1. Brush disposal	$6,804,350	$8,000,000	+$500,000	$8,500,000
2. Advance to "Forest protection and utilization" for fighting forest fires	a/2,838,024	- -	- -	- -
Total available or estimate b/	9,642,374	8,000,000	+500,000	8,500,000
Unobligated balance brought forward	-4,288,885	-2,207,250	-3,838,024	-6,045,274
Recovery of prior year advance for fighting forest fires	-798,659	-2,838,024	2,838,024	- -
Unobligated balance carried forward	2,207,250	6,045,274	500,000	6,545,274
Appropriation or estimate	6,762,081	9,000,000	- -	9,000,000

a/ Reflects obligations in 1961 for fighting forest fires which were recovered from the 1962 appropriation for Fighting Forest Fires.

b/ Represents obligations. Applied costs for 1961 are $9,564,022. The difference of $78,352 reflects, primarily, contractual services and equipment received in 1961 over contracts made and orders placed in that year.

STATUS OF PROGRAM

Timber cutting usually increases the fire hazard by increasing the dry fuel in the form of logging slash. This logging slash often is the principal factor contributing to the buildup of insect populations in cutover areas and may increase certain disease infestations. Also, damage may result from postsale movement of logging slash and debris into stream channels.

Because of these factors, national-forest timber sale contracts require treatment of debris resulting from cutting operations or deposit of funds to pay for this work, to the degree necessary to reduce fire hazard and buildup of insect populations to a point near normal, and to remove logging debris which might move into streams after the sale is closed. To the extent that it is economical and expedient to do so, the work is performed by the timber purchaser. When it is not feasible to have him do the work while he is operating in the area, the work is performed by the Government. The Brush Disposal appropriation represents deposits by the timber purchaser to cover costs of the work when it is performed by the Government as authorized under Section 6 of the Act of April 24, 1950 (16 U.S.C. 490).

There is a wide variation among Regions in the effect of timber cutting, and consequently in the manner of treating slash and debris. In the three eastern Regions, the volume cut per acre is relatively low, utilization is

close, and the general humid atmospheric conditions result in rapid decomposition of debris. Very little actual slash disposal work is done on sale areas in these three Regions. The exception is in some sales in the pine type where a heavier cut per acre is made, such as the jack pine stands of Minnesota. In such areas slash may be broker up by disking with heavy equipment which mixes it with the mineral soil so that the hazard is reduced and a good seedbed is provided to aid regeneration. However, treatment of slash to prevent insect epidemics is sometimes necessary in these areas.

In contrast to the light slash disposal requirements in the eastern Regions, the cost of slash abatement on most sale areas of the western Regions is high. The treatment varies greatly due to different methods of cutting. For instance, clear-cut areas in the Douglas-fir region are broadcast burned. In selectively cut areas the debris may be piled for burning and this may be done over the whole area or only in strips which break the area up into blocks.

Where treatment is to reduce the threat of insect or disease buildup, methods are coordinated with other treatments of the sale area--principally treatments to reduce fire hazard.

While slash disposal follows general prescriptions within Regions, the individual needs of each sale offering are planned and appraised prior to advertisement and appropriate specific requirements are incorporated into each timber sale contract. In each instance the least expensive method or combination of methods is used which will attain adequate protection of the area. In some instances adequate protection from fire is attained at less cost by providing additional protection for sale areas until the slash hazard reverts to near normal. Logging debris which moves into water courses under these conditions must be removed. Greater intensity of fire protection for several years and occasional costs for stream clearance may be less costly than complete slash disposal immediately after cutting. In such cases Brush Disposal funds are used in providing the needed manpower and facilities.

(k) Forest Fire Prevention

Appropriation, 1962 and base for 1963	$20,000
Budget Estimate, 1963	20,000

PROJECT STATEMENT

Project	1961	1962 (estimated)	1963 (estimated)
Forest fire prevention a/	$19,723	$27,160	$20,000
Unobligated balance brought forward	-4,580	-7,160	- -
Unobligated balance carried forward	7,160	- -	- -
Appropriation or estimate	22,303	20,000	20,000

a/ Represents obligations. Applied costs for 1961 are $20,316. The difference of $593 reflects, primarily, printing and reproduction, supplies and materials received in 1961 over orders placed in that year.

STATUS OF PROGRAM

The Smokey Bear licensing program is an important part of the Cooperative Forest Fire Prevention Campaign which has been in effect for 20 years. The Campaign itself has been conducted each year since 1942 as a cooperative project of the State Foresters and the Forest Service, United States Department of Agriculture, and is a public service program of the Advertising Council. The purpose of this Campaign is to utilize the free public service resources of the various national advertising channels such as car cards, poster display systems, radio and television networks and magazine and newspaper allocation plans in developing public cooperation in the prevention of man-caused forest fires. Since 1945, this Campaign has been built around Smokey Bear who has become recognized and accepted by the public as a nationwide symbol of forest fire prevention.

Under authorization of Public Law 359 of the 82nd Congress, the Secretary of Agriculture has issued rules and regulations governing the licensing program. These licenses specify payment of royalties (usually 5%) and set up certain controls for administering the program and collecting the royalties including advance deposits to protect the Government's interest. Such collections, along with appropriated funds are used to finance the Cooperative Forest Fire Prevention Campaign. The best items not only from a standpoint of collecting royalties but also in carrying the forest fire prevention message to the public were Smokey Bear comic books, Smokey Bear stamp books, Smokey Bear scarves, and Smokey Bear dolls.

Selected Examples of Recent Progress

1. On January 1, 1961 a Smokey Bear float appeared in the Rose Bowl Parade in Pasadena. This float, constructed through cooperation of the Forest Service and the Native Sons and Daughters of the Golden West, brought a fire prevention message to an estimated 100 million viewers. Arrangements were also made for a similar float for the January 1, 1962 Parade of Roses.

2. A new animated Smokey Bear exhibit "Smokey and Friends" was purchased for use in the East. This exhibit, together with the one purchased in 1959 for the West, are exhibited almost daily at various county and State fairs and national meetings throughout the country.

3. On October 3, 1961, a "Golden Smokey" statuette was awarded to the National Association of Transit Advertisers, Inc., at Macon, Georgia, in acknowledgment of outstanding public service to the National Forest Fire Prevention Campaign. They have displayed, free of charge, more than 1-1/2 million car and bus cards since the beginning of the Campaign.

4. A new procedure for distributing radio public service fire prevention messages in 1962 by the Advertising Council has been devised. Station coverage will increase from approximately 1,200 to 3,300 stations, thus insuring complete coverage of all radio stations for the first time.

5. The Advertising council, Inc., reported that Smokey Bear made over 2 billion home impressions last year.

6. Man-caused forest fires in the Nation dropped to 92,319 in 1960 as compared to 97,418 the year before as a result of increased forest fire prevention efforts. Much of this decrease is a direct result of the Smokey Bear program.

(1) Restoration of Forest Lands and Improvements

Appropriation, 1962 and base for 1963	$196,000
Budget Estimate, 1963	196,000

PROJECT STATEMENT

Project	1961	1962 (estimated)	1963 (estimated)
Restoration of forest lands and improvements	$8,137	$200,270	$196,000
Unobligated balance brought forward	-7,130	-4,270	- -
Unobligated balance carried forward	4,270	- -	- -
Appropriation or estimate	5,276	196,000	196,000

STATUS OF PROGRAM

Recoveries from cash bonds or forfeitures under surety bonds by permittees or timber purchasers, who fail to complete performance, are used to complete improvement, protection, or rehabilitation work on lands under Forest Service administration. Funds received as settlement of a claim are used for improvement, protection or rehabilitation made necessary by the action which led to the cash settlement (Act of June 20, 1958- 16 U.S.C. 579c).

(m) Payment to Minnesota (Cook, Lake, and St. Louis Counties) from the National Forests Fund

Appropriation, 1962 and base for 1963	$123,300
Budget Estimate, 1963	123,300

PROJECT STATEMENT

Project	1961	1962 (estimated)	1963 (estimated)
Payment to Minnesota (appropriation or estimate)	$123,275	$123,300	$123,300

STATUS OF PROGRAM

The Act of June 22, 1948, as amended (16 U.S.C. 577c-577h) provides that the Secretary of the Treasury, upon certification of the Secretary of Agriculture, shall pay to the State of Minnesota at the close of each fiscal year an amount equivalent to three-fourths of one percent of the fair appraised value of certain national forest lands in the counties of Cook, Lake, and St. Louis situated within the Superior National Forest. The Act further provides that payment to the State shall be distributed to each of these counties in conformity with the fair appraised value of such national forest lands in each county.

(n) Payments to Counties, National Grasslands

Appropriation, 1962 and base for 1963	$425,000
Budget Estimate, 1963	425,000

PROJECT STATEMENT

Project	1961	1962 (estimated)	1963 (estimated)
Payments to counties, national grasslands (appropriation or estimate)	$391,987	$425,000	$425,000

STATUS OF PROGRAM

At the end of each calendar year, 25% of the revenues from the use of submarginal lands are paid to counties under the provisions of Title III of the Bankhead-Jones Farm Tenant Act, approved July 22, 1937 (7 U.S.C. 1012).

(o) Payments to School Funds, Arizona and New Mexico, Act of June 20, 1910

Appropriation, 1962 and base for 1963	$99,200
Budget Estimate, 1963	115,000
Increase (due to an estimated increase in receipts for fiscal year 1962)	+15,800

PROJECT STATEMENT

Project	1961	1962 (estimated)	Increase	1963 (estimated)
Payments to school funds (appropriation or estimate) ...	$139,726	$99,200	+$15,800	$115,000

STATUS OF PROGRAM

Under provisions of the Act of June 20, 1910 (36 Stat. 562, 573) certain areas within national forests were granted to the States for school purposes. The percentage that these lands are of the total national forest area within the State is used in determining payments to the States. The receipts from all national forest land within the State are used as the basis for applying the percentage. For example, if total receipts for the State are $100,000 and if 10% of lands are in the "granted for school purposes" category, the payment to the State would be $10,000. The amounts so paid are deducted from the net receipts before computing the 25% payments to States.

As soon after the close of the fiscal year as the receipts from national forests and the area of school lands in the States of Arizona and New Mexico are determined, the payments are made to the States. Estimated payments in fiscal year 1962 to Arizona will be $98,856 and to New Mexico $355.

(p) Payments to States, National Forests Fund

Appropriation, 1962 and base for 1963	$25,045,000
Budget Estimate, 1963	29,000,000
Increase (due to an estimated increase in the national forest receipts for the fiscal year 1962)	+3,955,000

PROJECT STATEMENT

Project	1961	1962 (estimated)	Increase	1963 (estimated)
Payments to States (appropriation or estimate)	$35,408,615	$25,045,000	+$3,955,000	$29,000,000

STATUS OF PROGRAM

The Act of May 23, 1908, as amended (16 U.S.C. 500) requires, with a few exceptions, that 25% of all money received from the national forests during any fiscal year be paid to the States in which the forests are located, for the benefit of public schools and public roads of the county or counties in which such national forests are situated. The amount of this appropriation varies each year in direct proportion to national forest receipts during the previous fiscal year.

The amounts set aside from receipts collected for the sale of national forest timber, grazing and special use permits, etc., before the 25% is applied are listed below:

1. Payment to the State of Minnesota covering certain national forest lands in the Counties of Cook, Lake, and St. Louis situated within the Superior National Forest is made under the terms of the Act of June 22, 1948, Public Law 733. Receipts collected from the areas covered by this Act are excluded when the 25% payment to the State of Minnesota is computed.

2. For lands in certain counties in Utah, Nevada, and California, the States receive 25% of receipts only after funds, if made available by Congress, have been set aside for the acquisition of national forest lands within the specified national forests under the terms of special acts authorizing appropriations from forest receipts for this purpose.

3. Payments to the States of Arizona and New Mexico under the provisions of the Act of June 20, 1910, of shares of the gross receipts from the national forests in those States which are proportionate to the areas of land granted to the States for school purposes within the national forests.

(q) Construction of Warehouse and Related Facilities, Salt Lake City, Utah

PROJECT STATEMENT

Project	1961	1962 (estimated)	1963 (estimated)
Construction of warehouse and related facilities, Salt Lake City, Utah	$24,682	- -	- -
Unobligated balance brought forward	-24,682	- -	- -
Appropriation or estimate	- -	- -	- -

STATUS OF PROGRAM

Funds from the sale of a Forest Service fire warehouse lot together with improvements thereon, to Salt Lake City, Utah, were fully obligated in fiscal year 1961 for the construction of other similar facilities (72 Stat. 589).

(r) Working Capital Fund, Forest Service

This fund finances on a reimbursable basis various services such as repairing and replacing equipment, including aircraft, stocking and issuing supplies, operation of subsistence camps, operation of photographic and reproduction facilities, and tree nurseries in support of programs of the Forest Service (16 U.S.C. 579b). These service operations serve programs of fire protection, timber utilization, construction and maintenance of roads and other improvements, reforestation, grazing, watershed, forest and forest products research, and kindred conservation activities of the Forest Service, including cooperative assistance with other Federal agencies, States, counties, and individuals engaged in the same objectives.

Operating results and financial condition.--Government investment in the fund as of June 30, 1961, including donated assets and retained earnings for fiscal year 1961, is $23,862,399. By the end of 1963 the investment is anticipated to be $30,576,000, an increase of $6,713,601 which represents estimated earnings and donations during 1962 and 1963.

Receipts, non-operating income, and retained earnings include an estimated $1,500,000 for fiscal year 1963 identified as "Income provision for increased cost of equipment replacements" to be used only for financing the increased cost of equipment replacement, i.e., the difference between the cost of the replacement unit and the cost at time of acquisition of the unit being replaced. This increased cost is due to inflation and model improvement, and must be financed if the fleet strength is to be maintained and not depleted through the gradual attrition of price increases for replacements. The earnings for the provision for increased cost of replacements are derived from a factor which is included for this purpose in rental rates charged to program appropriations for equipment use and credited to the Working Capital Fund.

Retained earnings as of June 30, 1963 will total an estimated $5,800,000 which will consist of $1,874,000 gain on sale of equipment, $2,426,000 profit from operations, and $1,500,000 for provision for increased cost of replacement of equipment. It is planned to utilize the full amount of $1,500,000 for increased cost of replacement of equipment during fiscal year 1963. The gain on sale of equipment and part of the profit from operations have been applied toward increased cost of equipment replacements and purchase of fleet additions. The balance of the operating profit is being retained to furnish adequate working capital.

(s) Cooperative Work, Forest Service (Trust Fund)

Contributions are received from cooperators, including counties, States, timber sale operators, individuals, and associations, and are expended by the Forest Service in accordance with the terms of the applicable cooperative agreements. The work consists of protection and improvement of the national forests, work performed for national forest users, and forest investigations and protection, reforestation, and administration of private forest lands.

The major programs conducted under the account "Cooperative Work, Forest Service" are described below in terms of the projects reflected in the statement at the end of this section.

1. Construction and Maintenance of Roads and Trails, and

2. Construction and Maintenance of Other Improvements:

   Under the Acts of June 30, 1914 (16 U.S.C. 498) and March 3, 1925 and April 24, 1950 (16 U.S.C. 572) deposits for cooperative work are accepted from State and local government agencies, associations, Federal timber purchasers, and others for the construction and maintenance of roads, trails, and other improvements and for performing work which is the national forest users' responsibility, this method of performance of the work being of mutual benefit or of benefit to the public at large.

3. Protection of National Forests and Adjacent Private Lands: The Act of June 30, 1914 (16 U.S.C. 498) authorizes the acceptance of deposits for the protection of the national forests and the Act of March 3, 1925, as amended by Section 5, Act of April 24, 1950 (16 U.S.C. 572), authorizes the acceptance of contributions for the protection of private lands in or near the national forests. The major portion of the obligations is for the protection of private lands from fire. This arrangement helps both parties since there are millions of acres of private forest land intermingled with Federal ownership on the national forests. The lands in private ownership are usually in small tracts. It would be uneconomical for the owner to set up a fire control organization for the protection of his land. The advantage to the Government is that in many cases it would be necessary to suppress the fires on the private land without reimbursement in order to protect the adjoining Federal land.

4. Sale Area Betterment (including reforestation): Section 3 of the Act of June 9, 1930 (16 U.S.C. 576b) provides for deposits of funds by timber sale purchasers to cover the cost of reforestation and special cultural measures to improve the future stand of timber on the areas cutover by the purchaser. Deposits in fiscal year 1961 under this authorization totalled $14.7 million. Fiscal year 1961 accomplishments under this program are reported under the Forest Land Management subappropriation along with accomplishments for reforestation and stand improvement for that subappropriation.

5. Scaling: Under provisions of the Act of April 24, 1950 (16 U.S.C. 572) and of Section 210 of the Act of September 21, 1944 (16 U.S.C. 572a) acceptance of deposits from timber purchasers for cooperative scaling service is authorized. Such arrangements are established only when requested by the operator and when the operator pays the extra cost of such services.

6. Research Investigations: The Acts of June 30, 1914 (16 U.S.C. 498) and May 22, 1928 (16 U.S.C. 581i-1) authorize the acceptance of deposits for forestry research. Deposits are received from State and other public agencies, and from industrial, association, and other private agencies to finance research projects of mutual interest and benefit to both parties. The deposits may be made either in a single sum or on a continuing basis, and may either partially or wholly cover the cost of the research. The cooperative research projects may involve any aspect of forestry and vary widely as to scope and duration. A very common example of such cooperation is for a State to make a deposit to the cooperative work fund in order to intensify or to speed up completion of a comprehensive survey of the forest resources of the State. Other examples are State contributions toward forest fire research. The results of such cooperative investigations are made available to the general public as well as to the depositor.

7. Administration of Private Lands: The Act of March 3, 1925, as amended by Section 5, Act of April 24, 1950 (16 U.S.C. 572) authorizes the acceptance of contributions for the management of private lands. These contributions are made by private owners having land intermingled with or adjacent to national forests who wish these lands managed in accordance with good forest management practices. Their holdings are usually too small to warrant the employment of professional foresters to administer such tracts. The advantages to the Government include the avoidance of possible high fire hazard areas resulting from improper cutting practices, the elimination of the necessity of precisely marking the boundaries of the private land, and additional private forest land handled under proper forest practices.

8. Reforestation (private lands): The Act of March 3, 1925, as amended by Section 5, Act of April 24, 1950 (16 U.S.C. 572) authorizes the acceptance of contributions for reforestation of private lands situated within or near a national forest. This work is limited to areas of private land within a planting project on the national forests or to areas in which certain civic and other public-spirited organizations have taken an interest.

9. Statement on Utilization of Funds: Following is a statement of funds received and obligated and balances available by major activities:

COOPERATIVE WORK, FOREST SERVICE

Trust Fund

Project	Balance Available June 30, 1960	Actual fiscal year 1961			Estimate fiscal year 1962			Estimate fiscal year 1963		
		Funds Received	Obligations	Balance	Funds Received	Obligations	Balance	Funds Received	Obligations	Balance
1. Construction and maintenance of roads and trails	$1,093,839	$1,213,512	$1,279,320	$1,028,031	$1,300,000	$1,300,000	$1,028,031	$1,300,000	$1,300,000	$1,028,031
2. Construction and maintenance of other improvements	377,179	384,862	478,948	283,093	450,000	450,000	283,093	450,000	450,000	283,093
3. Protection on national forests and adjacent private land:										
(a) Fire	430,092	1,640,197	1,667,063	403,226	1,700,000	1,800,000	303,226	1,700,000	1,800,000	203,226
(b) Other	893,425	1,194,096	1,218,759	868,762	1,200,000	1,200,000	868,762	1,200,000	1,200,000	868,762
4. Sale area betterment on national forest lands (including reforestation)	15,674,059	14,746,816	14,043,564	16,377,311	15,155,000	14,555,000	16,977,311	15,655,000	15,055,000	17,577,311
5. Scaling of timber	193,016	529,102	497,306	224,812	500,000	500,000	224,812	500,000	500,000	224,812
6. Research investigations	411,355	855,191	953,923	312,623	1,000,000	1,000,000	312,623	1,000,000	1,000,000	312,623
7. Administration of private lands	14,486	69,429	66,547	17,368	70,000	70,000	17,368	70,000	70,000	17,368
8. Reforestation (private lands)	93,452	124,188	119,786	97,854	125,000	125,000	97,854	125,000	125,000	97,854
Total	19,180,903	20,757,393	20,325,216	19,613,080	21,500,000	21,000,000	20,113,080	22,000,000	21,500,000	20,613,080

Note:--Balances carried forward are due primarily to necessity of deferring work for which funds are deposited until the most practicable time. For instance, funds for sale area betterment are received in advance of cutting, but work cannot be started until cutting operations are completed. The time lag sometimes extends for several years, depending on the amount of preparatory work required in the sale area, weather conditions, etc.

Above obligations for 1961 include refunds to cooperators of $129,738.

STATEMENT OF OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS

(Includes only those amounts which, by November 30, 1961, were actually received or programmed for 1962 or 1963. Since work for other agencies is performed on a service basis, at the request of those agencies and for their benefit, it is not practicable to estimate in advance the amounts to be received in some cases.)

Item	Obligations, 1961	Estimated Obligations, 1962	Estimated Obligations, 1963
Allotments from:			
Watershed Protection, Soil Conservation Service - For planning, installing improvement measures, and investigations in river basins in connection with watershed protection activities	$1,032,540	$1,421,400	$1,341,300
Flood Prevention, Soil Conservation Service - For measures primarily for flood prevention (works of improvement)	2,297,854	2,828,745	2,695,300
Great Plains Conservation Program, Soil Conservation Service - For research services, advice and guidance to agencies conducting nursery production and tree planting phases of the Great Plains Conservation Program	16,177	16,850	16,850
Agricultural Conservation Program, Agricultural Stabilization and Conservation Service - For cooperation in administering the naval stores program	139,367	139,300	139,300
Conservation Reserve Program, Agricultural Stabilization and Conservation Service - For assistance in the conservation reserve program, primarily for expansion of production of tree seedlings	232,820	119,500	40,000
Total, Allotments	3,718,758	4,525,795	4,232,750
Allocations (Advances from other agencies):			
Oregon and California Grant Lands, BLM, Department of the Interior - For construction, operation, and maintenance of access roads, reforestation, and other improvements on the revested O&C Railroad grant lands administered by the Forest Service	- -	1,235,488	1,000,000

(Continued on next page)

Item	Obligations, 1961	Estimated Obligations, 1962	Estimated Obligations, 1963
Agency for International Development - For economic and technical assistance programs	140,740	176,470	176,470
Office of Emergency Planning - For radiological defense training	14,795	3,300	- -
Total, Allocations	155,535	1,415,258	1,176,470
Trust Funds:			
Cooperative Work, Forest Service:			
Trust funds deposited by cooperators for the accomplishment of certain projects which are of mutual benefit to the Forest Service and such cooperators as follows:			
1. Construction and maintenance of roads and trails	1,279,320	1,300,000	1,300,000
2. Construction and maintenance of other improvements	478,948	450,000	450,000
3. Protection of national forests and adjacent private land	2,885,822	3,000,000	3,000,000
4. Sale-area betterment	14,043,564	14,555,000	15,055,000
5. Scaling of timber	497,306	500,000	500,000
6. Research investigations	953,923	1,000,000	1,000,000
7. Administration	66,547	70,000	70,000
8. Reforestation	119,786	125,000	125,000
Total, Cooperative Work	20,325,216	21,000,000	21,500,000
Miscellaneous Contributed Funds (principally cooperative work on blister rust control)	585	- -	- -
Total, Trust Funds	20,325,801	21,000,000	21,500,000
Obligations under Reimbursements from Governmental and Other Sources:			
Forest protection and utilization a/	3,135,548	6,000,000	6,000,000
Forest roads and trails and Roads and trails for States b/	217,180	980,000	980,000
All other	136,515	263,000	263,000
Total, Reimbursements	3,489,243	7,243,000	7,243,000
TOTAL, OBLIGATIONS UNDER ALLOTMENTS AND OTHER FUNDS	27,689,337	34,184,053	34,152,220

(Continued on next page)

a/ Primarily from other Government agencies, States, and countries, for forest fire protection and suppression, insect and disease control, forest research, investigations at Forest Products Laboratory, surveys, land appraisals, mapping, cruising timber, preparation of timber management plans, snow scale readings, and other miscellaneous services.

b/ Primarily road construction for U. S. Army.

NOTE: In addition, foreign currencies are available under Section 104(k) of Public Law 480 for forest research projects abroad. This work is conducted by the Agricultural Research Service of the Department of Agriculture with the assistance of the Forest Service in the review and appraisal of forest research projects undertaken abroad. The dollar expenses of the Forest Service in connection with this work are paid from the appropriation "Forest protection and utilization."

(b) Watershed Protection

Appropriation Act, 1962	$53,787,000
Transfer to "Operating Expenses, Public Buildings Service, General Services Administration" for space rental	-41,000
Base for 1963	53,746,000
Budget Estimate, 1963	59,635,000
Increase	+5,889,000

Note: The budget estimate for 1963 proposes an increase of $5,889,000 above the amount appropriated for 1962. The following justifications are presented on the basis of available funds, and the amounts for 1961 and 1962 reflect carryover of unobligated balances from prior years. While this presentation reflects an estimated increase of $3,376,665 in obligations in 1963, it is likely that there will be some carryover of funds from 1962 to 1963. The extent to which there may be such carryover cannot be estimated at this time.

SUMMARY OF INCREASES AND DECREASES, 1963
(On the basis of available funds)

Decrease in installation of works of improvement in "pilot" watersheds	-1,736,450
Increase in installation of works of improvement in "P.L. 566" watersheds	+5,592,671
Decrease in loans and related expense	-644,556
Increase to make cooperative surveys and investigations with other agencies in additional river basin areas	+165,000

PROJECT STATEMENT
(On the basis of available funds)

Project	1961	1962 (estimated)	Increase or Decrease	1963 (estimated)
1. Investigations and planning	$4,997,707	$5,500,000	- -	$5,500,000
2. Installation of works of improvement:				
(a) "Pilot" demonstration watersheds	2,153,430	2,736,450	-$1,736,450(1)	1,000,000
(b) "P.L. 566" watersheds	29,244,222	43,209,329	+5,592,671(2)	48,802,000
3. Loans and related expense	2,109,757	3,644,556	-644,556(3)	3,000,000
4. Surveys and investigations of water resources programs	1,059,660	1,168,000	+165,000(4)	1,333,000
Subtotal a/	39,564,776	56,258,335	+3,376,665	59,635,000
Unobligated balance brought forward	-5,322,798	-2,512,335	+2,512,335	- -
Unobligated balance carried forward	2,512,335	- -	- -	- -
Total available or estimate	36,754,313	53,746,000	+5,889,000	59,635,000
Transfer in 1962 estimates to "Salaries and expenses, Office of the General Counsel"	+45,687	- -		
Transfer to "Operating Expenses, Public Buildings Service, General Services Administration"	- -	+41,000		
Total appropriation or estimate	36,800,000	53,787,000		

a/ Represents obligations. Applied costs for 1961 are $32,351,153. The difference of $7,213,623 reflects, primarily, the excess of contracts made and project agreements signed obligating funds for construction over contractual services actually rendered.

INCREASES AND DECREASES
(On the basis of available funds)

The net increase of $3,376,665 for watershed protection and flood prevention work is distributed as follows:

(1) A decrease of $1,736,450 in the installation of works of improvement in pilot watersheds.

Installation of works of improvement is expected to be completed during the current fiscal year in 7 of the 16 currently active pilot watershed projects. This will leave only 9 projects in operation in the fiscal year 1963. The estimate provides for continuing installation of works of improvement in these 9 projects in 1963.

The estimates include about $28,000 in 1962 and $120,000 in 1963 for repair or modification of a few structures in 3 reactivated projects. This work was determined to be a Federal responsibility rather than a maintenance responsibility of local sponsors.

(2) An increase of $5,592,671 for accelerating the installation of works of improvement in P. L. 566 watershed projects.

At the beginning of the fiscal year 1963 it is estimated that installation of works of improvement will be underway in 384 P.L. 566 projects and another 120 are expected to be approved for operations during the year. It is estimated that about 30 of these will not require funds during the year because of late approval or having no work scheduled. This will leave a total of 474 projects requiring funds. About 198 of these will be receiving advance engineering and technical assistance only. This involves preparation of plans, designs, and specifications for structural measures and the installation of land treatment measures required before construction starts. The remaining 276 projects will be in construction. An estimated 60 of these will be new construction starts requiring about $18,200,000 during the year. About 181 projects continuing construction begun in prior years will require an estimated $23,342,000. All work will be completed on an estimated 35 projects during the year for a cumulative total of 83 projects completed by the end of fiscal year 1963.

The following table shows the status of Public Law 566 projects and amounts obligated or estimated to be obligated:

Explanation	1961 Actual: Number	1961 Actual: Amount (Thousands)	1962 Estimate: Number	1962 Estimate: Amount (Thousands)	1963 Estimate: Number	1963 Estimate: Amount (Thousands)
1. Projects approved for operations and estimated completion cost:						
(a) Uncompleted projects at beginning of year	253	$165,534	289	$178,540	384	$255,331
(b) Projects approved during year	48	42,250	120	120,000	120	120,000
Total	301	207,784	409	298,540	504	375,331
2. Status of projects and amounts obligated:						
(a) Projects not requiring funds during year	28	- -	30	- -	30	- -
(b) Projects receiving advance engineering and technical assistance only	80	2,109	138	3,619	198	5,260
(c) Projects moved into construction stage during year	58	13,567	60	18,200	60	18,200
(d) Prior year projects continuing under construction	123	13,434	156	19,950	181	23,342
(e) Projects completed during year	12	134	25	1,440	35	2,000
Total	301	29,244	409	43,209	504	48,802
3. Uncompleted projects at end of year:						
(a) Obligations to date	289	73,176	384	108,223	469	134,525
(b) Estimated completion cost	289	178,540	384	255,331	469	326,529
4. Projects completed (cumulative) and total cost	23	4,422	48	12,584	83	35,084

(3) A decrease of $644,556 for loans and advancements to local organizations.

A review of the pending applications and of the watersheds where loan applications are anticipated has indicated that several large loans to municipalities would probably be closed in fiscal year 1962. These loans would increase the average amounts of loans made in fiscal year 1962 over those now estimated to be made in fiscal year 1963, and it appears reasonable to expect that the demand for watershed loans can be met with $645,000 less in 1963 than the amount estimated for 1962. The large loans expected to close in 1962 include: Hillsboro, Ohio ($891,908); Rapides Parish, Louisiana ($800,000); and Muscogee County, Georgia ($600,000).

(4) An increase of $165,000 to make cooperative surveys and investigations in additional watersheds of rivers and other waterways.

The increase would permit the Department to respond to additional requests from State and Federal water resource management agencies for participation in cooperative surveys and investigations of various river basin areas with a view to coordinating the Departmental watershed programs with the water resource development projects of other Federal, State, and local agencies. Requests have been received for such surveys and investigations from agencies contemplating water resource developments in the Upper Susquehanna and Genessee Rivers in New York, the Texas River basins not surveyed by the U. S. Study Commission, the James River in South Dakota, the Embarrass River in Illinois, the Elkhorn and Big Blue Rivers in Nebraska, the Devil's Lake area in North Dakota, and the French Broad River in North Carolina.

STATUS OF PROGRAM

Current Activities: The Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress), as amended (16 U.S.C. 1001-1008), provides for cooperation between the Federal Government and the States and their political subdivisions in a program to prevent erosion, floodwater, and sediment damages in the watersheds of rivers and streams and to further the conservation, development, utilization, and disposal of water. The work of the Department under this item consists of the following:

1. Investigations and surveys of proposed small watershed projects upon application by local sponsoring organizations and collaboration with them in the preparation of project work plans. These plans outline the soil and water management problems in the watershed, what has been or is planned to be done to alleviate these problems, the works of improvement proposed to be installed under this program, the estimated benefits and costs, the cost-sharing and operation and maintenance arrangements, and other facts necessary to justify Federal participation in developing the project.

2. Installation of the works of improvement specified in the approved watershed work plans:

   a. Construction of structural measures: This work includes the installation of structural measures for flood prevention and water management such as floodwater retarding structures, stream channel improvement, stabilizing and sediment control structures, irrigation reservoirs and canals, etc. Detailed construction plans, designs, and specifications are prepared for these measures by the Department. The Federal Government bears all of the construction cost of structural measures for flood prevention except easements and rights-of-way, water rights, and administration of contracts, and pays for an equitable part of the cost of installation of the agricultural water management and fish and wildlife development features. Local organizations must pay all costs of works of improvement for purposes other than these. Funds are provided to local organizations under project agreement for the Federal share of the cost of contracts which they award for installation of authorized works of improvement on other than Federal lands. Federal agencies do this work on Federal lands which they administer. Engineering assistance is provided for flood prevention, fish and wildlife, and agricultural water management construction work, either directly by the Federal Government or by advancement of funds to local organizations for employment of engineers.

   b. Technical and financial assistance in the installation of land treatment measures: Proper land use and treatment is a basic requirement of a watershed project. The Department furnishes farmers and ranchers technical assistance needed to speed up the installation of land treatment measures and achieve required protection of structural measures constructed in the watershed area. This assistance may be furnished to supplement that being received under other conservation programs to the extent that the latter falls short of meeting objectives.

Certain types of land treatment measures are required to be installed under this program to achieve justified off-site flood prevention benefits. Such measures provide little or no benefit, or such long deferred benefits to the landowner that he cannot be expected to bear the entire installation cost. The costs of applying such measures may be paid for in part by the Department under authority of Section 3 of the Act. The rate of financial assistance on such special measures may not exceed the rate of assistance for similar practices being paid under other conservation programs of the Department. Measures eligible for financial assistance are intensified fire prevention, stabilization of critical areas, minor gully, streambank, and grade stabilization structures, and other on-farm measures which may be used in lieu of downstream flood prevention structures. This work is accomplished through project agreements with local sponsoring organizations who arrange for and accomplish the work by contract or force account. Payments are made by the Federal Government to the local sponsoring organizations as the land treatment measures are installed.

3. Installation of works of improvement in 16 remaining active pilot watersheds which were authorized by the Congress under authority of the Act of April 27, 1935 (16 U.S.C. 590a-f) to serve as demonstrations of the effectiveness of complete watershed treatment in preventing erosion and reducing floodwater and sediment damage.

4. Program evaluation studies in selected watershed projects to determine the effectiveness of structural and land treatment measures installed.

5. Surveys and investigations of watersheds of rivers and other waterways in cooperation with other Federal, State, and local agencies, as the basis for development of coordinated inter-agency water resources and related programs.

6. The making of loans to local organizations to finance the local share of the costs of installing planned works of improvement for flood prevention and for the conservation, development, utilization and disposal of water. Repayment with interest is required within 50 years after the principal benefits of improvements first become available.

Program Assignments

The Soil Conservation Service has general responsibility for administration of the work of the Department authorized under the Watershed Protection and Flood Prevention Act and for the formulation of guiding principles and procedures. It assists local organizations with (a) the development of watershed work plans, and (b) the installation of land treatment measures and structural works of improvement on non-Federal land in authorized watersheds. Some works of improvement are also installed on Federal lands by arrangement with the administering agency. It also makes surveys and investigations of the watersheds of rivers and other waterways and cooperates with other agencies in the planning, development, and coordination of works and programs.

The Forest Service participates in the development of watershed work plans and in the installation of watershed improvement measures. It concerns itself with (a) all national forest and other lands in the authorized watersheds that are administered by the Forest Service, and (b) certain specialized technical assistance on other forest lands in the watersheds. It also provides specialized assistance in forestry aspects of coordinated river basin programs.

The Bureau of Land Management and the Bureau of Indian Affairs of the Department of the Interior participate in the planning and installation of works of improvement on lands under their jurisdiction. The Economic Research Service of the Department of Agriculture assists with the development of criteria to be used in the economic evaluation of work plans and measures installed in watershed projects. It also makes special economic analyses of specific watershed projects and of river basin resource development proposals. The Farmers Home Administration has responsibility for administration of Section 8 of the Act relating to loans to local organizations.

Funds are made available from this appropriation to the U. S. Weather Bureau and the U. S. Geological Survey, either by transfer or reimbursement, for precipitation and runoff data needed in watershed program evaluation, planning, and design work.

Selected Examples of Recent Progress:

INVESTIGATIONS AND PLANNING

Agency Participation

Allocation of funds to the cooperating agencies for 1961 and 1962 and proposed for 1963 for investigations and planning watershed protection projects are as follows:

Agency	1961 Obligations	1962 Estimate	1963 Estimate
Soil Conservation Service	a/ $4,645,824	$5,085,000	$5,093,000
Forest Service	335,968	395,000	382,000
Economic Research Service	15,915	20,000	25,000
Total	4,997,707	5,500,000	5,500,000

a/ Includes $4,913 for reimbursable work performed by the U. S. Geological Survey.

Development of Watershed Work Plans

During the fiscal year 1961, the Department received 186 State approved applications from local sponsors for assistance in planning and carrying out works of improvement in small watersheds. This brought the total number of applications received from local organizations to 1,505 as of June 30, 1961. These applications covered 106,558,300 acres in 48 States and Puerto Rico. During the fiscal year 1961 an additional 93 applications were approved for planning assistance which brought to 659 the total number that had been approved for planning since the inception of the Watershed Protection Program. Watershed work plans had been completed on 374 of these watersheds as of June 30, 1961. As of that time also, planning had been suspended or terminated on a total of 111 watersheds for which work plans had been partially completed. The suspensions and terminations were at the request of the local sponsoring organizations or with their concurrence when it became evident that benefit-cost ratios would prove unfavorable.

As of June 30, 1961, no watershed planning assistance had been initiated on 846 of the applications received from local sponsoring organizations. It is estimated that 511 of the watersheds covered by these applications will be determined as suitable for the development of project work plans and that 335 will not qualify for assistance under present criteria.

In twenty States, to supplement the work under this item, non-Federal planning assistance amounting to more than $1,200,000 was provided in the fiscal year 1961 through trust fund agreements, reimbursements, State controlled watershed planning parties, and personnel provided by the States to supplement Service planning staffs. For the fiscal year 1962, it is estimated that such State and local assistance for watershed planning will amount to about $1,537,000. The Department makes no commitment that additional funds will be allotted to these States for watershed installations by reason of the fact that additional watershed work plans are being prepared with non-Federal funds and services.

Status of Applications for Watershed Planning

Activity	1961 Actual	1962 Estimate	1963 Estimate
Applications:			
Received, current fiscal year	186	210	220
Received, cumulative at June 30	1,505	1,715	1,935
Not suitable for planning at June 30	335	345	355
Planning:			
Authorized, current fiscal year	93	125	125
Authorized, cumulative at June 30	659	784	909
Suspended or terminated at June 30	111	117	122
Completed, current fiscal year	84	110	110
Completed, cumulative at June 30	374	484	594
In process at June 30	174	183	193
Remaining to be planned at June 30	511	586	671
Not yet approved for operations	62	52	42
Operations:			
Authorized, current fiscal year	48	120	120
Authorized, cumulative at June 30	312	432	552
Completed, current fiscal year	12	25	35
Completed, cumulative at June 30	23	48	83
In process at June 30	289	384	469

INSTALLATION OF WORKS OF IMPROVEMENT

Agency Participation

The following table shows funds obligated for installation of watershed works of improvement for 1961 and estimates for 1962 and 1963 under allotments and allocations to cooperating agencies of the Department of Agriculture and Department of the Interior.

Agency	1961 Obligations	1962 Estimate	1963 Estimate
Soil Conservation Service:			
Pilot Watersheds	$2,101,868	$2,671,050	$956,700
P.L. 566 Watersheds .....a/.	28,472,049	42,113,423	47,773,000
Forest Service:			
Pilot Watersheds	10,404	26,400	14,300
P.L. 566 Watersheds	584,114	898,000	839,000
Economic Research Service:			
Pilot Watersheds	41,158	39,000	29,000
P.L. 566 Watersheds	58,330	58,000	61,000
Bureau of Land Management - P.L. 566 Watersheds	37,792	28,150	14,000
Bureau of Indian Affairs - P.L. 566 Watersheds	22,400	18,100	20,000
U. S. Geological Survey - P.L. 566 Watersheds	69,537	93,656	95,000
Total	31,397,652	45,945,779	49,802,000

a/ Includes $87,253 in 1961 and estimates of $86,000 in 1962 and 1963 for reimbursable work performed by the U. S. Weather Bureau.

Status of Pilot Demonstration Watersheds

The following table shows the status of the remaining active pilot watersheds which were started in 1954 under the authority of the Act of April 27, 1935 (16 U.S.C. 590a-590f) to demonstrate and evaluate the effectiveness of works of improvement installed in small watersheds for watershed protection and flood prevention.

Explanation	1961 Actual		1962 Estimate		1963 Estimate	
	Number	Amount (Thousands)	Number	Amount (Thousands)	Number	Amount (Thousands)
Uncompleted projects at beginning of year and estimated completion cost	21	$8,370	16	$6,365 b/	9	$3,629
Status of projects and amounts obligated:						
1. Projects completed during the year	5	121	7	362	6	218
2. Continuing prior year projects	16	2,032	9	2,374	3	782
Total	21	2,153	16	2,736	9	1,000
3. Uncompleted projects at end of year: a/						
(a) Obligations to date	16	21,585	9	15,672	3	9,776
(b) Estimated completion cost	16	6,217	9	3,629	3	2,629
4. Projects completed (cumulative) and total cost	38	15,535	45	24,185	51	31,081
5. Projects discontinued (cumulative) and total cost	8	330	8	330	8	330

a/ Includes obligations for project evaluation studies subsequent to the fiscal year 1959 on all projects on which these studies are being carried out.

b/ Includes $148,000 for repair or modification of a few structures in three reactivated projects. This work was determined to be a Federal responsibility rather than a part of the usual maintenance responsibility of the local sponsors.

Sixty-two pilot demonstration watersheds were started in 1954 in cooperation with local sponsors. Eight of these were subsequently discontinued at the request of the local sponsors which left 54 projects to be completed. As of June 30, 1961, all installations of works of improvement had been completed in 38 projects. Seven additional projects are currently scheduled for completion in 1962. This will leave nine projects under construction in the fiscal year 1963. These nine projects are:

Calleguas Creek, California
Walnut Creek, California
Switzler Creek, Kansas*
Chippewa River Tribs., Minn.*
Indian Creek, Nebraska*
Upper Salt-Swedeburg Tribs., Nebraska
Third Creek, North Carolina*
Twelve Mile Creek, S. C.*
Cow Bayou, Texas*

*Scheduled for completion in the fiscal year 1963.

Installation of works of improvement in three projects will continue beyond the fiscal year 1963. Upper Salt-Swedeburg Tribs., Nebraska, is scheduled for completion in 1964 and Calleguas and Walnut Creek projects in California in 1966. The total Federal cost of the 62 pilot projects (including the 8 projects that were discontinued before completion at the request of local sponsors) is currently estimated at $43,816,000.

Project Evaluation Studies on Pilot Watersheds

Some evaluation studies have been carried out in all of the pilot watershed projects in which works of improvement were installed. As of June 30, 1961, out of the total of $37,450,336 obligated in the pilot projects, about $1,500,000 was for project evaluation studies. It is estimated that $160,000 will be required to continue these studies in the fiscal year 1962 and $125,000 will be needed in the 1963 fiscal year.

After a review of pilot project evaluation studies, it was determined that the studies should be continued at least through the fiscal year 1970 in about 12 key projects. The continuation of the studies is necessary to obtain data over a sufficient period of time to provide a reliable long range appraisal of the effectiveness of works of improvement installed under the Watershed Protection program. The estimated cost of continuing the project evaluation studies after the fiscal year 1961 and through the fiscal year 1970 in the 12 selected projects is $1,000,000. This would bring the estimated total cost of evaluating the effectiveness of work done in the pilot projects to about $2,500,000, or 5.7% of the total cost of the pilot watershed protection program.

Progress in Installation of Works of Improvement in "Pilot" Watershed Projects by States

The following tabulation shows by State descriptive information concerning the extent of the program and rate of progress in obligating funds for the installation of works of improvement in the pilot watersheds:

State	Number Projects Approved	Total Watershed Area (Acres)	Total Estimated Federal Cost	% Federal Cost to Total Cost	Total Cumulative Federal Obligations to 6/30/61	% Federal Cost Obligated as of 6/30/61
Arizona	1	59,136	$213,507	49.5	$213,507	100.0
Arkansas	1	164,627	2,266,470	54.9	2,143,572	94.6
California	3 a/	332,815	8,368,829	47.2	6,153,842	73.5
Colorado	1	75,560	989,322	69.5	989,322	100.0
Georgia	1	40,598	1,025,890	63.1	1,019,090	99.3
Idaho	1 a/	42,880	101,759	80.5	101,759	100.0
Illinois	3 a/	100,885	1,279,305	80.0	1,279,305	100.0
Indiana	1	36,632	161,824	55.5	161,824	100.0
Iowa	3	31,673	742,237	61.3	742,237	100.0
Kansas	6 a/	83,354	1,390,888	62.7	1,372,756	98.7
Kentucky	4	87,665	1,759,526	55.1	1,759,526	100.0
Minnesota	2	606,488	2,961,995	55.0	1,987,425	67.1
Missouri	2	22,961	865,511	66.3	865,511	100.0
Montana	1 a/	-	8,622	100.0	8,622	100.0
Nebraska	4	212,884	3,569,771	64.8	3,203,168	89.7
New Hampshire	1	30,555	52,466	51.5	52,466	100.0
New Jersey	1	69,120	830,351	71.5	830,351	100.0
New Mexico	2	265,350	792,843	59.2	792,843	100.0
New York	4 a/	77,269	937,271	75.9	854,443	91.2
North Carolina	1	66,167	825,737	58.8	638,861	77.4
North Dakota	1	295,575	3,103,364	72.8	3,035,585	97.8
Ohio	2 a/	59,460	1,767,644	80.4	1,736,425	98.2
Oklahoma	1	30,894	406,182	58.7	400,831	98.7
Pennsylvania	1	15,425	65,153	36.0	65,153	100.0
South Carolina	1	67,346	1,231,979	57.5	887,366	72.0
South Dakota	1	2,900	134,312	81.1	134,312	100.0
Tennessee	1	14,900	596,270	62.7	524,266	87.9
Texas	4	274,770	4,276,720	61.8	3,405,873	79.6
Utah	2	48,482	584,420	75.4	584,420	100.0
Virginia	1	42,706	283,647	59.0	283,647	100.0
Washington	2 a/	53,080	344,042	98.3	344,042	100.0
West Virginia	1	5,325	347,270	80.9	347,270	100.0
Wisconsin	1	5,800	145,943	78.1	145,943	100.0
Subtotal	62	3,323,282	42,431,070	59.6	37,065,563	87.4
Project evaluation studies b/			1,384,773		384,773	
Total obligations			43,815,843		37,450,336	

a/ Includes one project which was discontinued before completion at the request of the sponsors.

b/ Obligations for evaluation studies subsequent to 6/30/59. Prior to the fiscal year 1960 all evaluation costs were charged to projects.

Status of Public Law 566 Watersheds

After watershed work plans have been completed by sponsoring local organizations with the Department's assistance and the work plans have been approved by the Department or the Congress as suitable for Federal participation, technical and financial assistance is provided for installation of the works of improvement specified in the work plan. On non-Federal lands local sponsoring organizations, provide land easements and rights-of-way; contract for construction work; operate and maintain the projects; and in the case of multiple-purpose structures, bear a share of construction costs. Federal agencies do this work on Federal lands which they administer.

Advance engineering and technical assistance is furnished to all approved projects before they are advanced to the construction stage. During the advance engineering and technical assistance stage, surveys and investigations are made and detailed designs, specifications, and engineering cost estimates are prepared for construction of structural measures. Areas are delineated where easements are required and technical assistance is furnished to operators and landowners to accelerate planning and application of land treatment measures.

The project construction stage begins with the execution of the first project agreement for construction of works of improvement, after required easements are obtained or assured and the sponsoring local organization has met all other requirements. Under a project agreement the local sponsoring organization agrees to construct a segment of the project which may consist of an individual or interrelated group of structures. The project agreement obligates the Government to furnish its share of construction costs. Payments are made to the contracting local organization in accordance with the project agreement as the work progresses. Engineering and other services are provided for the preparation of contracts and inspection of construction. Technical assistance in planning and installing land treatment measures is continued.

In the fiscal year 1961, 48 projects were approved for operations and 58 projects were moved into the construction stage. This brought to 312 the total number of projects approved for operations as of June 30, 1961. Installation of works of improvement was actively underway in 273 projects during the fiscal year 1961. Eighty of these were receiving advance engineering and technical assistance only and 193 were in construction. Of these in construction 12 were completed which brought the cumulative total of projects completed to 23 as of June 30, 1961. Twenty-eight projects approved for operations did not require Federal funds during the fiscal year 1961. This was because they were approved late in the fiscal year 1961, or had no work scheduled for that year.

The following tabulation shows the status of Public Law 566 projects and amounts obligated or estimated to be obligated:

Explanation	1961 Actual		1962 Estimate		1963 Estimate	
	Number	Amount (Thousands)	Number	Amount (Thousands)	Number	Amount (Thousands)
1. Projects approved for operations and estimated completion cost:						
(a) Uncompleted projects at beginning of year	253	$165,534	289	$178,540	384	$255,331
(b) Projects approved during year	48	42,250	120	120,000	120	120,000
Total	301	207,784	409	298,540	504	375,331
2. Status of projects and amounts obligated:						
(a) Projects not requiring funds during year	28	--	30	--	30	--
(b) Projects receiving advance engineering and technical assistance only	80	2,109	138	3,619	198	5,260
(c) Projects moved into construction stage during year	58	13,567	60	18,200	60	18,200
(d) Prior year projects continuing under construction	123	13,434	156	19,950	181	23,342
(e) Projects completed during year	12	134	25	1,440	35	2,000
Total	301	29,244	409	43,209	504	48,802
3. Uncompleted projects at end of year:						
(a) Obligations to date	289	73,176	384	108,223	469	134,525
(b) Estimated completion cost	289	178,540	384	255,331	469	326,529
4. Projects completed (cumulative) and total cost	23	4,422	48	12,584	83	35,084

Progress in Installation of Works of Improvement in P. L. 566 Watershed Projects by State

The following tabulation shows by State descriptive information concerning the extent of the program and rate of progress in obligating funds for the installation of works of improvement in P. L. 566 watershed. Opposite the listing of the State there is shown information concerning projects wholly within a State. Footnotes a/ and b/ indicate interstate projects. Only the applicable portion of an interstate project is included in a state.

State	Number Projects Approved 6/30/61	Total Watershed Area (Acres)	Total Estimated Federal Cost	% Federal Cost to Total Cost	Total Cumulative Federal Obligations to 6/30/61	% Federal Cost Obligated as of 6/30/61
Alabama	7	331,696	$4,187,257	51.3	$1,270,484	30.3
a/	2	191,548	1,589,035	60.2	47,843	3.0
b/	(1)	6,000	159,556	60.9	18,823	11.8
Total, Ala.	9	529,244	5,935,848	53.7	1,337,150	22.5
Arizona	2	223,778	6,244,695	88.2	1,066,108	17.1
Arkansas	11	509,033	8,017,406	61.0	1,671,648	20.9
California	5	300,290	15,447,695	72.4	4,692,847	30.4
Colorado	7	465,966	3,191,217	70.7	1,692,341	53.0
Connecticut	2	22,606	1,124,826	49.5	380,812	33.9
a/	2	52,274	1,505,069	60.1	582,852	38.7
Total, Conn.	4	74,880	2,629,895	55.1	963,664	36.6
Delaware	2	124,298	2,462,275	48.4	459,044	18.6
Florida	6	280,050	2,710,197	50.1	705,269	26.0
a/	1	55,600	164,178	44.0	99,219	60.4
Total, Fla.	7	335,650	2,874,375	49.7	804,488	28.0
Georgia	16	711,209	7,968,722	57.9	3,247,553	40.8
b/	(2)	9,266	13,400	11.1	--	--
Total, Ga.	16	720,475	7,982,122	57.5	3,247,553	40.7
Hawaii	2	30,760	5,420,600	70.0	134,884	2.5
Idaho	2	34,800	417,780	90.2	253,586	60.7
Illinois	5	249,416	2,665,930	38.1	993,723	37.3
Indiana	6	358,756	5,101,864	59.9	1,599,756	31.4
Iowa	8	144,191	5,779,281	77.1	1,193,406	20.6
Kansas	7	542,337	12,833,186	78.2	984,267	7.7
Kentucky	12	1,043,800	13,367,048	43.9	2,521,276	18.9
a/	1	189,019	1,316,430	34.4	57,357	4.4
b/	(1)	7,807	19,715	23.7	--	--
Total, Ky.	13	1,240,626	14,703,193	42.8	2,578,633	17.5
Louisiana	8	607,309	5,096,598	37.6	2,356,739	46.2
Maryland	5	101,027	2,385,038	62.8	756,034	31.7
Massachusetts	2	243,799	1,053,238	61.4	176,949	16.8
b/	(2)	10,600	85,212	49.6	81,261	95.4
Total, Mass.	2	254,399	1,138,450	60.3	258,210	22.7
Michigan	4	132,975	1,036,134	24.1	301,649	29.1
Minnesota	4	230,184	609,793	29.5	132,355	21.7

Progress in Installation of Works of Improvement
in P. L. 566 Watershed Projects by States - Continued

State	Number Projects Approved 6/30/61	Total Watershed Area (Acres)	Total Estimated Federal Cost	% Federal Cost to Total Cost	Total Cumulative Federal Obligations to 6/30/61	% Federal Cost Obligated as of 6/30/61
Mississippi	10	365,386	$7,051,615	56.6	$1,320,381	18.7
a/	1	67,060	1,707,868	66.4	313,726	18.4
b/	(2)	13,920	335,222	68.4	44,210	13.2
Total, Miss.	11	446,366	9,094,705	58.6	1,678,317	18.5
Missouri	4	169,080	2,969,197	52.2	765,521	25.8
Montana	1	71,200	341,993	40.8	309,510	90.5
Nebraska	10	534,098	6,299,906	49.9	1,070,959	17.0
Nevada	2	181,300	1,016,255	76.1	777,627	76.5
New Hampshire	2	22,660	347,656	67.7	304,961	87.7
New Jersey	5	154,934	1,455,543	64.1	835,246	57.4
New Mexico	13	684,661	3,821,760	87.6	2,409,156	63.0
New York	3	333,980	3,974,586	59.2	869,448	21.9
North Carolina	12	544,329	5,741,222	51.8	1,584,294	27.6
North Dakota	4	562,450	2,147,285	49.4	1,021,539	47.6
a/	2	221,377	528,738	50.4	120,329	22.8
Total, N. D.	6	783,827	2,676,023	49.6	1,141,868	42.7
Ohio	3	220,866	3,362,886	63.2	169,439	5.0
Oklahoma	15	1,705,316	20,927,778	55.3	10,195,250	48.7
Oregon	4	75,146	2,866,446	74.2	1,553,112	54.2
Pennsylvania	7	189,117	5,977,425	78.1	1,541,621	25.8
South Carolina	5	142,199	1,753,147	58.6	546,422	31.2
South Dakota	5	216,183	2,780,149	56.9	377,310	13.6
b/	(2)	105,927	813,757	61.7	676,101	83.1
Total, S. D.	5	322,110	3,593,906	57.9	1,053,411	29.3
Tennessee	7	325,522	9,302,091	74.7	2,299,074	24.7
a/	3	127,533	3,152,851	68.9	451,285	14.3
b/	(2)	26,157	373,188	57.2	131,072	35.1
Total, Tenn.	10	479,212	12,828,130	72.6	2,881,431	22.5
Texas	31	2,848,225	36,960,652	61.9	12,591,941	34.1
Utah	5	191,121	2,678,000	51.9	1,162,719	43.4
Virginia	7	301,400	2,882,287	55.4	749,960	26.0
Washington	6	86,894	6,654,885	69.7	2,611,307	39.2
West Virginia	5	41,837	1,988,797	76.9	997,814	50.2
Wisconsin	8	302,639	3,064,529	75.6	1,203,149	39.3
Wyoming	3	51,458	901,100	84.5	617,211	68.5
Total projects	312	18,094,369	256,152,189	59.6	77,099,779	30.1
Project evaluations					33,609	
Undistributed equipment					464,626	
Grand total	312	18,094,369	256,152,189		77,598,014	

a/ Includes applicable portion of interstate project(s) for which this state has primary responsibility.

b/ Includes applicable portion of interstate project(s) for which another state has primary responsibility.

Soil Surveys and Farm Conservation Plans in Watershed Projects

(Pilot and P. L. 566 Watersheds)

Watershed Protection funds may be used to accelerate soil surveys, planning and installation of land treatment measures for watershed protection and flood prevention where necessary and included in the project work plans. This includes the early completion of soil surveys on farms within the project area that have not previously been mapped and providing assistance to farmers and ranchers with the development of basic conservation plans and application of planned conservation measures. The following table shows the acres surveyed and conservation plans prepared in the 1961 fiscal year and the totals in project areas as of June 30, 1961.

Item	1961 (Actual With Watershed Protection Funds)	Totals in Project Area (Including "Conservation Operations") as of June 30, 1961
Soil surveys (acres)	598,670	14,596,532
Total number cooperators	4,194	63,788
Basic conservation plans:		
Number	4,295	50,610
Acres	746,106	9,772,100

Works of Improvement Installed in Watershed Projects

(Pilot and P. L. 566 Watersheds)

The following tabulation shows the accomplishments in 58 "Pilot" projects and 301 P. L. 566 projects in which installation of works of improvement was underway or had been completed as of June 30, 1961.

Measure	Unit	1961 Accomplishments (Actual): With Watershed Protection Funds	1961 Accomplishments (Actual): With Conservation Operation Funds	Total on the Land to 6/30/61
Structural and Land Stabilization Measures:				
Floodwater retarding structures	No.	256	--	787
	Ac.Ft.	178,070	--	513,384
Stabilization and sediment control:				
(a) Structures	No.	67	--	1,816
(b) Silt and debris basins	No.	4	--	245
Subwatershed waterway improvements:				
(a) Outlet construction	Mile	4	--	103
Stream channel improvement:				
(a) Channel stabilization	Mile	3	--	41
(b) Channel improvement	Mile	182	--	593
Diversion ditches and dikes	Mile	2	--	90
Stabilization of critical areas:				
(a) Roadside erosion control	Mile	187	24	1,109
(b) Revegetation	Acre	17,242	2,005	73,166
Land Treatment Measures:				
Contour farming	Acre	32,014	30,580	696,838
Cover Cropping	Acre	58,161	86,346	481,580
Crop residue utilization	Acre	99,230	114,269	1,050,968
Stripcropping	Acre	3,367	7,559	177,612
Pasture planting	Acre	53,130	55,115	1,006,805
Revegetation	Acre	--	490	10,887
Range improvement	Acre	4,354	46,143	221,485
Terraces	Mile	623	659	38,421
Diversions	Mile	73	92	2,893
Pond construction	No.	548	926	28,337
Waterway development	Acre	1,173	1,408	38,229
Tree planting	Acre	17,582	5,977	97,360
Woodland protection	Acre	--	13	21,374
Wildlife area improvement	Acre	4,092	2,535	35,721
Erosion control structures	No.	123	134	6,271

Pilot Projects Demonstrate Effectiveness

Completed structural and land treatment measures in pilot watershed projects are demonstrating the effectiveness of the watershed protection and flood prevention program, as shown in the following examples:

1. Missouri - East Branch of the South Fork of the Blackwater River: This project, comprising 12,613 acres and 118 farms, was sponsored by the Johnson County Soil Conservation District. It was authorized in December 1953 and completed in the fiscal year 1960 at a Federal cost of $422,331 and local cost of about $204,000. The main problems were floodwater and sediment damage along with gully and sheet erosion on agricultural lands.

   About half of the planned land treatment measures such as waterways, terraces, field diversions and related practices had been applied as of June 30, 1961. Twenty of the planned 23 stabilization, and sediment and floodwater retarding structures had been completed as of this same date together with needed diversion ditches, dikes, and waterway improvement.

   On April 15, 1960, a heavy rainstorm occurred pouring 5.5 inches of rainfall on the watershed. Some flooding occurred for a few hours in the project area, but there was very little crop loss on bottom land and no appreciable damage on upland fields where planned land treatment measures had been applied.

2. North Dakota - Tongue River: This project is sponsored by three soil conservation districts and a water conservation and flood control district. It contains 295,575 acres of privately owned land, of which 80% is cropland, 11% woodland and 9% in miscellaneous uses. The principal problems in the project area were floodwater and sediment damage to agricultural lands. It is scheduled for completion in the fiscal year 1962 at an estimated Federal cost of $3,103,364 and local cost of about $895,000.

   More than 80% of the planned land treatment measures have been applied. Of the 703 farms in the project, 358 were district cooperators and 221 had developed basic conservation plans as of June 30, 1961. Applied land treatment measures as of this same date include 164,791 acres of crop rotation, 141,898 acres of crop residue management, 7,114 acres of stripcropping, 1,213 acres of tree planting, and 32,373 acres of cooperative forest fire protection.

   Nine of ten planned floodwater retarding structures and most of the channel improvement work had been completed as of June 30, 1961. The tenth dam was nearing completion. Some of the structures on this project have multi-benefits and special storage features, the cost of which is being paid by other organizations. The City of Cavalier and the North Dakota Game and Fish Department paid $18,000 for 922 acre-feet of storage in one dam. Pembina County flood control district paid $12,193 for 1,842 acre-feet of storage for recreation and public use. Title to land or easements and rights-of-way valued at $200,000 have been obtained from 215 landowners for the structural works of improvement by the sponsoring organizations.

In the spring of 1960 when the project was about 60% complete, a fast, late snow melt in the high plains west of the valley resulted in a 5-10 year frequency runoff. The eight completed floodwater retarding structures filled rapidly to more than half of storage capacity, and the runoff flows from the uncontrolled areas were conducted through the improved channels without flooding or damage in the valley. Many farmers said it was the first runoff of that magnitude they had ever seen without flooding. Considerable flooding occurred in an adjoining untreated watershed.

Installations in P. L. 566 Projects Providing Protection

Planned project installations of land treatment and structural measures for watershed protection and flood prevention had been completed in 23 P.L. 566 projects as of June 30, 1961, and work was progressing well in most of the other 181 projects approved for construction. The measures installed were proving their effectiveness in reducing floodwater, erosion, and sediment damages in the watersheds as evidenced by the typical examples below:

1. Georgia - Bear Creek Watershed: This project is sponsored by the Upper Ocmulgee River Soil Conservation District, assisted by the local Bear Creek Watershed Association. The area consists of 23,324 acres in 138 farms. All installations of planned works of improvement were completed in the fiscal year 1960 at a Federal cost of $182,857 and local cost of about $297,000.

   Land treatment has progressed very effectively. Measures installed as of June 30, 1961, include 29 miles of terracing, 31 acres of waterways, 61 farm ponds, 8,366 acres of pastures planted, and 650 acres of cropland converted to trees.

   Installation of planned structural measures was completed in the fiscal year 1959. These include 43,628 feet of clearing, snagging and removing logs and debris for channel improvement; 7 miles of channel excavation involving about 99,000 cubic yards of excavation; and 25 miles of road-bank stabilization. Easements and rights-of-way for the structural measures covering 120 acres and valued at $24,000 were acquired by the sponsors.

   A 3-inch rainstorm in 45 minutes occurred in June 1959 shortly after the planned structural work was completed. West Bear and East Bear Creeks stayed within their banks until the flood flow passed below the improved channels. There was no appreciable damage done by this storm.

2. North Carolina - Folley Ditch Watershed: Sponsors of this project include the Roanoke-Chowan Soil Conservation District, Gates County Board of County Commissioners, and the Gates County Drainage District No. 1. The principal problems were floodwater and sediment damage and poor drainage of agricultural lands in this 3,170 acre watershed. The project was completed in the 1961 fiscal year at a Federal cost of $27,242 and local cost of about $23,000.

Of the 31 farms, and small plots of land, all except 6 have basic conservation plans. The estimated cost of completed land treatment measures is $18,553 which includes cover crops, pasture seeding, farm drainage, and other related work. Nearly all of the planned land treatment measures had been installed as of June 30, 1961. Structural measures completed in the project include 4.1 miles of main channel construction and 3.3 miles of lateral drains. The new channels have proven their value in removing floodwaters and in providing excellent drainage outlets for farm ditches.

In the fall of 1960, Hurricane Donna poured about 8 inches of rain on the watershed in 24 hours. The project installations functioned as planned. Floodwaters were back inside the new main and lateral channels in less than 6 hours and all drainage ditches were back to normal wet weather flow in 24 hours. Farmers have taken advantage of the new outlets to adequately drain most of their cropland. The project is also helpful to wildlife. Deer graze on the fescue sodded spoilbanks and use the main channel for water and to get away from hunting dogs. Quail nesting in the bottom land are not flooded on the nesting site or the young drowned by floodwaters.

Agricultural Water Management Features Included in P. L. 566 Projects

Sixty-four of the 312 projects approved for operations as of June 30, 1961, included structural measures for agricultural water management purposes in addition to flood prevention features. Fifty-four of these projects included drainage improvements; twelve, irrigation; three, both drainage and irrigation; one, agricultural water level control; and one, agricultural water supply. The total installation cost of the agricultural water management features in the 64 projects is approximately $10,900,000. Local interests are to bear about $6,300,000 of this cost. The total estimated cost of structural measures for all purposes in the 64 projects is about $74,600,000. Two typical examples of these projects where the local people are installing locally important measures to develop, conserve, more efficiently utilize, and dispose of water resources follow:

1. Montana - Lower Willow Creek Watershed: This project of 71,200 acres was authorized for operations July 25, 1958. The watershed is located in Granite County, and 61% of the area is privately owned.

   The principal problem in the watershed is the control and use of runoff and management of water on irrigated lands. Land treatment on the irrigated lands and the associated management of such lands is extremely important, and constitutes a sizeable contribution by the local people. Total project cost is estimated at $834,540 of which $542,440 is to be furnished by the local people. A loan in the amount of $337,500 was made to the Lower Willow Creek Drainage District by the Farmers Home Administration to cover part of the local costs.

   More than a third of the needed land treatment practices had been established in the watershed as of June 30, 1961. This work includes land leveling, establishment of distribution canals and field ditches, and hayland and pasture plantings. Construction of the 4,819 acre-foot storage dam was started in August of 1960 and will be completed early in the fiscal year 1962. It is anticipated that irrigation water from this dam will be used during the summer of 1962. Eventually 3,134 acres of cropland will receive supplemental water from this dam.

2. Florida - Fisheating Creek Marsh: This 51,200 acre project is sponsored by the Highlands Soil Conservation District and Highlands County Board of Commissioners. Structural measures were completed in the fiscal year 1961, and it is estimated that land treatment will be completed by the end of 1963. The main problem was floodwater damage to grassland, State and County roads, and bridges.

   As of June 30, 1961, 17 of the 21 landowners in the project area were district cooperators and 14 of these had developed basic conservation plans covering 50,510 acres. Land treatment measures installed as of this same date include farm drains benefiting 720 acres and 51 drop spillways to provide safe outlets into the main channel for the individual farm drainage systems.

   Structural measures completed as of June 30, 1961, include 14 miles of channel improvement, 10 miles of ditch construction, and 2 water control structures. About 1,090,000 cubic yards of excavation were required to complete the channel and ditch construction. The two water control structures permit water table control and thus prevent rapid oxidation of the organic soils. Easements valued at $30,330 were obtained for the entire project, all of which were donated.

   A rainfall of 12 inches in four days in May 1960 and 6 inches in 24 hours from Hurricane Donna in September 1960 caused overflows along the channels, but no real damage occurred. Landowners estimate the project netted them an additional three months of grazing during the fall of 1960.

Watershed Project Benefits Greatly Exceed Costs

The total estimated installation cost of the 312 Watershed Protection projects approved for operations as of June 30, 1961, is about $431,000,000. Approximately $256,000,000 of this cost will be borne by the Federal Government from funds provided under Public Law 566 and the remaining $175,000,000 will be borne by State, local, and other Federal interests.

Structural measures comprise about $286,000,000 of the total project installation cost in the 312 projects. Funds made available under Public Law 566 will bear approximately $237,000,000 of this cost and local interests will assume the balance of $49,000,000. For every $1.00 invested for structural measures in the 312 projects, a return of about $1.90 is expected. The total average annual benefit from project structural measures is estimated to be $22,200,000 and the total average annual cost is estimated to be $11,900,000.

The total cost of installing land treatment measures on the 312 projects is estimated at $145,000,000. Funds appropriated under Public Law 566 will bear about $16,500,000 of this cost, and other local, State, and Federal interests will bear the remaining $128,500,000. Local organizations will bear all operation and maintenance costs. Many economic studies and years of experience have shown that benefits from land treatment measures exceed costs; thus, in program planning, no benefit-cost calculations are made for land treatment measures for watershed protection.

Fish and Wildlife Habitats Being Improved in P. L. 566 Watershed Projects

The Watershed Protection and Flood Prevention Act, as amended, includes provision for Federal assistance in the installation of works of improvement for fish and wildlife development in watershed projects where the State and local sponsors contribute at least 50% of the installation cost of such developments. Local sponsors and fish and game agencies are showing considerable interest in this phase of watershed project development. As of June 30, 1961, the local sponsoring organizations in 20 watershed projects had included fish and wildlife development features in their watershed work plans. Total installation cost of these features is estimated to be $1,600,000 of which local interests will pay $800,000. The following examples are typical of the fish and wildlife developments being installed as a part of watershed project plans:

1. Arkansas - Flat Creek Project: The project includes 24,050 acres, all of which is privately owned. Project completion is scheduled for the fiscal year 1965. The main problems in the watershed include floodwater and sediment damage to agricultural lands, poor drainage, critically eroded areas, and the need for fish and wildlife development. The sponsors of the project are Lawrence County Soil and Water Conservation District, Flat Creek Watershed Improvement District, and Arkansas Game and Fish Commission.

   Of the 130 farmers in the project, 125 were district cooperators, and 124 had developed basic conservation plans as of June 30, 1961. Land treatment measures applied as of this same date include 1,595 acres of cover crops, 2,000 acres of crop residue use, 3,494 acres of pasture planting, 2,519 acres of brush control, 14 acres of tree planting, and 44 farm ponds constructed. About 85 acres of critically eroded areas had also been treated.

   Planned structural measures consist of 5 floodwater retarding structures, 1 multiple-purpose structure, 4.6 miles of diversions, and 10.2 miles of channel improvement. Construction of the first two floodwater retarding structures is in progress with completion scheduled for September 1961.

   The Arkansas Game and Fish Commission acquired land at a cost of about $100,000 for the multiple-purpose dam currently under construction. This structure will provide temporary storage for flood prevention and 5,500 acre-ft. of permanent storage for fish and wildlife development. The Arkansas Highway Commission will relocate 1.1 miles of a paved State highway to permit construction of the dam.

   All easements and rights-of-way have been secured for 4 of the 6 dams planned, and for 2 of the 6 ditches. In addition, 40 of the 56 easements required for the remaining structures have been signed.

2. New York - Ischua Creek: This 74,900 acre project is sponsored by the Cattaraugus County Board of Supervisors, Cattaraugus County Soil Conservation District, New York State Conservation Department, and the Ischua Creek County Small Watershed Protection District. It was authorized June 21, 1960, and is expected to cost $1,506,303. The principal problems are floodwater damage to agricultural lands, and to residential and industrial property in the village of Franklinville.

   Work on accelerating installation of planned land treatment measures got underway in the 1961 fiscal year. As of June 30, 1961, 187 of the 410 farmers in the project area were district cooperators and 145 had developed basic conservation plans. These landowners had installed as of this same date 1,020 acres of stripcropping, 27 miles of diversions, 1,940 acres of pasture planting, 9 miles of streambank protection, and 7,300 acres of tree planting. Planned structural works of improvement consist of five floodwater retarding structures, two trout lakes, one wildlife marsh, diking, debris basins, and stream channel improvement. Two floodwater retarding structures are scheduled for construction in the fiscal year 1961. Planned trout stream improvement work will be started by the State Conservation Department in the summer of 1961.

Projects Include Municipal Water Supply

The Watershed Protection and Flood Prevention Act, as amended, permits the inclusion of capacity for municipal water supply in reservoirs constructed for flood and sediment detention. The State and local sponsors must pay the entire cost of construction, including engineering and other installation services for the additional capacity. The opportunity to assure future water supplies in small communities with resultant increased chances of attracting industry is creating considerable interest in this feature of watershed project development. As of June 30, 1961, local sponsors in 19 watersheds had included municipal water supply features in their watershed work plans. The total installation cost of these features in the 19 projects is about $3,800,000. Two examples of projects which include capacity for municipal water supply follow:

1. Georgia - Little Tallapoosa River: This project is sponsored by the West Georgia Soil Conservation District, Carroll County Commissioners, and City Governments of Carrollton, Villa Rica, and Temple. It contains 62,516 acres and the estimated total cost is $1,693,044, of which 64% is Federal and 36% non-Federal. The principal problems in the watershed are floodwater and sediment damage to agricultural lands.

   More than 60% of the planned land treatment measures had been applied as of June 30, 1961. Of the 850 farmers in the project, 562 were district cooperators, and 495 had developed basic conservation plans as of this same date. Completed land treatment measures include 53 miles of terraces, 35 acres of waterway development, 172 acres of tree planting, and 9 miles of roadbank treatment.

As of June 30, 1961, 9 of the 14 planned floodwater retarding structures and 11.1 miles of channel improvement had been installed. Contracts had been let on 2 additional floodwater structures and 8.5 miles of channel improvement. The Town of Temple paid $4,363 for municipal water storage included in one of the completed structures. The Town of Villa Rica will pay all costs allocated to 445 acre-feet of municipal water storage included in another structure.

The Little Tallapoosa River Watershed Association, the West Georgia Soil Conservation District, and interested landowners have obtained easements and rights-of-way, valued at $72,000, from 308 landowners for the structural works of improvement.

From February 23 to 28, 1961, 10.5 inches of rain fell following several days of less intense rain. The Mayor of Carrollton stated that the nine structures completed prevented the city waterworks from being inundated, thus saving the city several thousand dollars. There was no appreciable damage to roads, bridges, or pastures in the flood plain of this project. In contrast, damage to roads and bridges in Carroll County outside the project area was extensive during this rainstorm.

2. Virginia - Mountain Run Project: This project includes 28,700 acres of privately owned land. It is sponsored by the Culpeper Soil Conservation District, and the Town of Culpeper. The estimated total cost is $544,399, of which 31% is Federal and 69% non-Federal. The principal problem was floodwater and sediment damage to agricultural lands, and urban damage in the Town of Culpeper.

More than 85 percent of the planned land treatment measures had been applied as of June 30, 1961. These include 1,938 acres of contour stripcropping, 4,529 acres of crop residue utilization, 112 acres of waterway development, 2,021 acres of perennial grasses and legumes, 4,290 acres of pasture planting, and 52 acres of wildlife area treatment.

Two floodwater retarding structures, one multiple-purpose structure, and 6.1 miles of channel improvement had been completed as of June 30, 1961. The structure for flood prevention and municipal water storage has been completed about a year. The sponsors and the local people are well pleased with its benefits.

LOANS AND RELATED EXPENSE - P.L. 566

Loan Activities

Under Section 8 of Public Law 566, 83rd Congress, as amended by Public Law 1018 of the 84th Congress, loans are authorized to be made to local organizations to help defray the local share of the cost of Watershed Protection projects. The Farmers Home Administration is responsible for making loans under provisions of the Act for watershed projects which have been approved for installation of works of improvement. The law requires that all of the costs allocated for flood prevention purposes, except the cost of easements and rights-of-way, water rights, and administration of contracts, be paid from Federal funds. Most of the loans, therefore, are expected to be made for the local share of the cost of multiple-purpose projects, organizational expenses, legal costs, and the acquisition of land, and easements and rights-of way which the local organizations find they must purchase.

No loans will be made under this authority for the local costs of land treatment measures installed in the project primarily for watershed protection purposes. These land treatment measures primarily benefit the lands upon which they are installed, and the costs are normally borne by the individual landowners rather than by the sponsoring organization, although Federal cost-sharing and technical assistance is available for most of these measures through other Departmental conservation programs.

Application for Loans

During the fiscal year 1961, 27 applications for watershed loans amounting to about $6.1 million were received by the Farmers Home Administration. This compares with 32 applications amounting to $5.6 million received the preceding fiscal year. There were 60 active applications totalling $12.1 million at the close of fiscal year 1961, and 12 new applications were received during the first 4 months of fiscal year 1962. It is estimated that a total of about 50 applications will be received during fiscal year 1962.

Characteristics of Loan Requests

Applications for loans received by the Farmers Home Administration have varied greatly in amount. Slightly more than half of these applications have been for loans of $100,000 or more. Most applications have included requests for funds to purchase rights-of-way and pay legal fees and organization costs. The larger loan requests have included funds to pay the local organization's share of the installation costs of drainage channels, municipal water storage, irrigation works and other multiple-purpose improvements. The smallest loan approved thus far was for $7,229 and the largest was for $1,769,000. As of October 30, 1961, 14 watershed loans amounting to $3,003,929 have been approved and closed. The following are representative of the nature of these approved loans:

1. Gravity Drainage District No. 2 of Tensas Parish, Louisiana: A loan of $61,000 was made to Gravity Drainage District No. 2 to pay legal, organizational and construction administration expenses for channel improvements in a 186,072 acre North Tensas watershed. Of this amount, $7,500 was for acquisition of easements and $7,500 for cost-sharing on drainage construction. The works of improvement in this watershed will protect valuable cropland and pastureland in an area of average rainfall of 53 inches per year.

2. Prairie Creek Conservancy District, Indiana: The Prairie Creek Conservancy District, one of the sponsors in the 88,690 acre Prairie Creek watershed, obtained a loan of $418,500 to pay costs of rights-of-way, relocations, legal services, the local share of construction costs, and the payment of debts incurred for preliminary expenses. The works of improvement will provide protection from frequent floodwater damage and will return major benefits to all residents of the watershed. Structural measures planned include 13 floodwater retarding structures, 15 miles of levees, and 33 miles of stream channel improvement.

SURVEYS AND INVESTIGATIONS OF WATER RESOURCES

Agency Participation

Funds for surveys and investigations of river basin areas for inter-agency program coordination purposes are allocated to participating agencies in the Department as follows:

Agency	1961 Obligations	1962 Estimate	1963 Estimate
Soil Conservation Service	$766,653	$876,000	$1,023,000
Forest Service	102,055	102,000	106,000
Economic Research Service	190,952	190,000	204,000
Total	1,059,660	1,168,000	1,333,000

River Basin Activities

Section 6 of P.L. 566, 83rd Congress, as amended, authorizes the Secretary of Agriculture to cooperate with other Federal, State, and local agencies in making surveys and investigations of the watersheds of rivers and other waterways as a basis for the development of coordinated water resources and related programs. The Department is represented on the Inter-Agency Committee on Water Resources which has been established to facilitate the coordination of water and related land resource activities by the various member Federal departments and agencies.

Much of the actual coordinating work is done in the field. It also maintains representation on various River Basin Inter-Agency Committees, which serve as points of contact between representatives of this Department and of other Federal departments and agencies and the States in these basin areas, to keep all concerned mutually informed of the activities of the member agencies and to facilitate matters of inter-agency coordination. The Department, in 1961, maintained such representation on Committees in the Arkansas-White-Red, Columbia, Missouri, Northeast, and Pacific Southwest areas.

The Department is participating in cooperative surveys and investigations with the Corps of Engineers in the Potomac River Basin, the Upper Mississippi River area, and the Arkansas River Multiple Purpose Project in Arkansas and Oklahoma; and with the Department of the Interior in reappraising the direct agricultural benefits anticipated from the participating projects in the Upper Colorado River Storage Project. Surveys are also being made of the Yazoo-Mississippi River area in cooperation with the Mississippi State Board of Water Commissioners, and in the Tombigbee River Basin in cooperation with the Mississippi Board of Water Commissioners and the Alabama Water Resources Study Commission, with the Nevada Department of Conservation and Natural Resources in the Humboldt River Basin, with the Oregon State Water Resources Board in the Middle Williamette and other River Basins, with agencies of the State of Utah in the Sevier River Basin and with the Colorado Water Conservation Board in the Gunnison River Basin. Some cooperative assistance is being provided to the river basin study commissions for the Southeast and the Texas river areas.

In addition, requests have been received or there are prospects for cooperation in surveys and investigations in the watersheds of the Susquehanna and Genesee Rivers in New York and Pennsylvania; the Upper Colorado River in Colorado; the Pearl and Big Black Rivers in Mississippi; the Elkhorn and Big Blue Rivers in Nebraska; the Rio Grande, Pecos, Red, Canadian, and Sabine Rivers in Texas; the James River in South Dakota; the Embarrass River in Illinois; the Iowa-Cedar Rivers in Iowa; the Meramec River in Missouri; and the Poteau River in Arkansas and Oklahoma.

The following examples are representative of the surveys and investigations being carried on by the Department in these river basin areas:

1. Potomac River Basin - Maryland, Pennsylvania, Virginia, and West Virginia: In cooperation with the Corps of Engineers, the Department is participating in a survey and investigation of the Potomac River watershed in Maryland, Pennsylvania, Virginia, and West Virginia. It is assisting in the preparation of a basin water resources report based on a projection of some 50 years. The Soil Conservation Service, Forest Service, and Economic Research Service are participating in the study for the Department. Present schedules contemplate the completion of this survey in the fiscal year 1962.

2. Humboldt River - Nevada: The Department is cooperating with the Nevada Department of Conservation and Natural Resources in a survey and investigation of the watershed of the Humboldt River to develop information which will provide a basis for the development of sound Watershed Protection projects under Public Law 566; and for the coordination of water and land resource conservation, development and improvement projects and programs of the Department with related projects and activities of the State and of other Federal agencies. Several other State and Federal agencies also are cooperating with the State in the consideration of related matters with which they are concerned.

3. Tombigbee River - Alabama and Mississippi: In cooperation with the Board of Water Commissioners of the State of Mississippi and the Alabama Water Resources Study Commission, a survey and investigation of the watershed of the Tombigbee River is under way. Information developed is to be used by the Department to determine opportunities for development of Watershed Protection projects under P.L. 566 and in coordinating its watershed and other programs with soil conservation districts and other local organizations, agencies of the Mississippi and Alabama State Governments, and other Federal agencies. The information will be used by the Board of Water Commissioners in planning and administering the physical aspects of water use and management in the basin. The survey is expected to be completed in the fiscal year 1963.

Conservation Needs Inventory on Watersheds

The Inventory of Soil and Water Conservation Needs included an estimate of the number of small watersheds which need project action. About 12,000 watersheds of a size suitable for projects under the Watershed Protection and Flood Prevention Act or similar programs were delineated as a part of the National inventory. It was estimated that more than 8,000 of the delinated watersheds need project actions of various kinds, on nearly one billion acres, or about half the total land area of the United States; the reduction of floodwater and sediment damage is the most extensive problem in the small watersheds, which affects more than 125 million acres on nearly one million farms and ranches; project action is needed to prevent flood damages on nearly 63 million acres, protect nearly 24 million acres from critical erosion damage, and to provide for drainage improvements on about 45 million acres and for irrigation improvements on 14 million acres.

(c) Flood Prevention

Appropriation Act, 1962	$25,000,000
Transfer to "Operating Expenses, Public Buildings Service, General Service Administration" for space rental	-1,000
Base for 1963	24,999,000
Budget Estimate, 1963	24,000,000
Decrease	-999,000

Note: The following justifications are presented on a funds available basis, and the amounts available for 1961 and 1962 include unobligated balances carried over from prior years. While this results in an apparent decrease of $3,632,310 in estimated obligations for 1963, it is likely that there will be some carryover of funds from 1962 to 1963. The extent to which there might be such carryover cannot be estimated at this time.

SUMMARY OF DECREASES, 1963
(On the basis of available funds)

Decrease in the rate of installation of works of improvement ..	-3,632,310

PROJECT STATEMENT
(On the basis of available funds)

Project	1961	1962 (estimated)	Decreases	1963 (estimated)
1. Works of improvement .	$19,743,555	$26,632,310	-$3,632,310(1)	$23,000,000
2. Loans & related expense	1,655,000	1,000,000	- -	1,000,000
Subtotal a/	21,398,555	27,632,310	-3,632,310	24,000,000
Unobligated balance brought forward	-4,461,865	-2,633,310	2,633,310	- -
Unobligated balance carried forward	2,633,310	- -	- -	- -
Total available or estimate	19,570,000	24,999,000	-999,000	24,000,000
Transfer to "Operating Expenses, Public Buildings Services, General Services Administration"	- -	1,000		
Total appropriation or estimate	19,570,000	25,000,000		

a/ Represents obligations. Applied costs for 1961 are $17,550,086. The difference of $3,848,469 reflects, primarily, the excess of obligations for contracts awarded for construction over contractual services actually rendered during that year.

DECREASES

(1) A decrease of $3,632,310 in the projected obligations for installation of works of improvement in the 11 authorized flood prevention projects.

Estimated obligations of $26,632,310 in 1962 include a carryover of $2,633,310 from prior years. This carryover resulted primarily from inability of local organizations to obtain easements or complete financial arrangements for their part of project costs. It is likely that a carryover of funds for similar reasons will occur in 1962. The estimate of $23,000,000 requested for installation of works of improvement for fiscal year 1963 will enable the Department to continue installation of works of improvement at a substantial rate in each of the 11 authorized projects as shown in the attached table.

Distribution of Funds to Watersheds

Watershed	1961 Obligations	Total Availability, 1962			1963 Budget Estimate
		Total Available	Balance Carried Forward from 1961	1962 Appropriation	
Buffalo Creek, New York	$329,186	$476,075	$63,722	$412,353	$343,700
Colorado (Middle), Texas	2,909,660	2,364,953	665,953	1,699,000	1,800,000
Coosa, Ga., Tenn.	835,929	1,172,163	26,463	1,145,700	1,296,500
Little Sioux, Iowa, Minn.	1,023,898	1,209,342	64,342	1,145,000	1,250,000
Little Tallahatchie, Miss.	927,598	1,424,889	192,440	1,232,449	1,232,600
Los Angeles, Calif.	1,700,106	2,339,841	116,641	2,223,200	1,469,700
Potomac, Md., Pa., Va., W. Va.	1,074,564	2,116,260	297,460	1,818,800	1,902,400
Santa Ynez, California	453,020	1,982,061	194,461	1,787,600	900,600
Trinity, Texas	3,899,273	4,228,033	128,361	4,099,672	4,250,000
Washita, Okla., Texas	4,338,719	5,141,277	142,552	4,998,725	5,117,600
Yazoo, Mississippi	2,128,232	3,877,416	740,915	3,136,501	3,136,900
Emergency Measures	123,369	300,000	- -	300,000	300,000
Loans and Related Expense	1,655,000	1,000,000	- -	1,000,000	1,000,000
Total	21,398,554	27,632,310	2,633,310	24,999,000	24,000,000

STATUS OF PROGRAM

Current Activities: The Flood Control Acts, as amended and supplemented (33 U.S.C. 701-709, 16 U.S.C. 1006a), provide for installation of (1) mainstream works of improvement for the control of floods, for which the Department of the Army is responsible, and (2) watershed improvement measures to prevent floods; reduce floodwater, sediment, and erosion damages; and further the conservation, development, utilization, and disposal of water, for which the Department of Agriculture is responsible. The work of this Department under this item, which is carried on in the 11 watersheds authorized by the Flood Control Act of December 22, 1944, as amended and supplemented, consists of:

1. Preparation of detailed subwatershed work plans in collaboration with soil conservation districts and other local sponsoring organizations. These plans outline the soil and water management problems in the subwatershed, the steps that have been or are authorized to be taken to alleviate these problems, the proposed works of improvement to be installed, the estimated benefits and costs, cost-sharing and operation and maintenance arrangements, and other facts necessary to justify Federal participation in project development.

2. Installation of the works of improvement specified in the approved subwatershed work plans:

a. Construction of structural measures: This work includes the installation of structural measures for flood prevention and water management such as floodwater retarding structures, stream channel improvement, stabilizing and sediment control structures, irrigation reservoirs and canals, etc. The Department prepares detailed plans, designs, and specifications and usually does the contracting for installation of structures. All of the construction cost of the flood prevention measures except easements, rights-of-way and water rights; an equitable part of the cost of the agricultural water management and the fish and wildlife development features of the project; and the cost of related engineering services are paid by the Federal government. Local organizations must pay all costs of works of improvement installed for purposes other than these.

b. Technical and financial assistance in the installation of land treatment measures: Proper land use and treatment is a basic requirement of a watershed project. The Department furnishes farmers and ranchers technical assistance needed to install the land treatment measures and achieve required protection of structural measures constructed in the subwatershed area. This assistance supplements technical assistance available under other conservation programs.

Certain types of land treatment measures are required to be installed under this program to achieve justified offsite flood prevention benefits. Such measures provide little or no benefit, or such long deferred benefits to the landowner that he cannot be expected to pay any substantial part of the cost of their installation on his farm. The Federal government may pay part or all of the cost of installing these special measures. Measures eligible for this assistance are intensified fire prevention; stabilization of critical areas; minor gully, streambank, and grade stabilization structures; and other on-farm measures which may be used in lieu of installing downstream flood prevention structures. The Department may furnish vegetative plantings and other materials to landowners for establishment of these essential measures or it may contract the required work or do it by force account.

3. Making of loans to local organizations to finance the local share of the costs of carrying out planned works of improvement for flood prevention and for the conservation, development, utilization, and disposal of water. Repayment with interest is required within fifty years after the principal benefits of improvements first become available.

Proposed improvements by the Department are correlated with and supplement and protect mainstream work installed by the Corps of Engineers, the Bureau of Reclamation, and others, in addition to providing protection to the watershed lands and property above the mainstream works. The proper and continued maintenance of installed measures is the key to the long-time effectiveness of the watershed improvement programs. Landowners and operators generally maintain those land treatment measures which benefit primarily the lands upon which they are installed. Local units of government have the responsibility to maintain structural measures for flood prevention and water management which provide primarily off-site benefits.

Program Assignments

The Soil Conservation Service has general responsibility for administration of the work of the Department of Agriculture authorized under the Flood Control Acts. The Soil Conservation Service and the Forest Service carry out the planning and installation of land treatment measures and structural works of improvement in the authorized watersheds. The Forest Service activities are concerned with (a) all national forests and other lands in the authorized watersheds that are administered by that Service, (b) all range land in or adjacent to national forests which is used in conjunction with such forests under formal agreement with the landowner, and (c) certain specialized technical assistance on other forest lands within the watersheds.

The Soil Conservation Service activities are concerned with all other private and public lands in the watersheds. The Farmers Home Administration has responsibility for administration of Section 8 of Public Law 83-566, as amended by Public Law 84-1018, and Public Law 86-468, relating to loans to local organizations. The Economic Research Service is making an appraisal of the economic impacts of the flood prevention program in the Washita River Basin.

Selected Examples of Recent Progress:

WORKS OF IMPROVEMENT

Allocation of Funds by Agency

Funds available for the planning and installation of works of improvement and for loans are allocated as follows:

Agency	1961 Obligations	1962 Estimate	1963 Estimate
Soil Conservation Service	$17,445,701	$23,475,565	$19,974,700
Economic Research Service	--	28,000	30,000
Farmers Home Administration ...	1,655,000	1,000,000	1,000,000
Forest Service	2,174,484	2,828,745	2,695,300
Emergency Measures	123,369	300,000	300,000
Total	21,398,554	27,632,310 a/	24,000,000

a/ Includes $2,633,310 unobligated balances brought forward from fiscal year 1961.

The following table provides a breakdown by watershed of the allocations for the fiscal years 1962 and 1963.

Watershed	1962 Funds Available Agency Distribution			1963 Budget Estimate Agency Distribution		
	SCS	FS	Total	SCS	FS	Total
1.Buffalo Creek,NY..	$467,722	$8,353	$476,075	$343,200	$500	$343,700
2.Colorado (Middle) Texas ..	2,364,953	--	2,364,953	1,800,000	--	1,800,000
3.Coosa, Ga.,Tenn. ..	1,101,702	70,461	1,172,163	1,250,000	46,500	1,296,500
4.Little Sioux Iowa, Minn.	1,209,342	--	1,209,342	1,250,000	--	1,250,000
5.Little Tallahatchie, Miss. ..	1,044,626	380,263	1,424,889	860,700	371,900	1,232,600
6.Los Angeles, California	1,091,037	1,248,804 +9,800	2,339,841	267,000	1,202,700	1,469,700
7.Potomac, Md.,Va., Pa., W.Va.	2,013,988	102,272	2,116,260	1,800,000	102,400	1,902,400
8.Santa Ynez, California	1,799,089	182,972	1,982,061	722,000	178,600	900,600
9.Trinity, Texas ...	4,228,033	--	4,228,033	4,250,000	--	4,250,000
10.Washita, Okla., Texas a/	5,138,677	2,600	5,141,277	5,115,000	2,600	5,117,600
11.Yazoo, Miss.	3,044,396	833,020	3,877,416	2,346,800	790,100	3,136,900
12.Emergencies b/ ...	300,000	--	300,000	300,000	--	300,000
13.Loans & related expense c/	--	--	1,000,000	--	--	1,000,000
Total	23,803,565	2,828,745 +9,800	27,632,310	20,304,700	2,695,300	24,000,000

a/ Amounts shown as available to the Soil Conservation Service include allotments of $28,000 in 1962 and $30,000 in 1963 to the Economic Research Service for evaluation studies in the Washita River flood prevention project.

b/ Under authority of Section 216 of the Flood Control Act of 1950, not to exceed $300,000 may be expended each fiscal year for emergency measures when a fire, flood, or any other natural element or force has caused sudden impairment of the watershed. This amount is not included in the amounts proposed for distribution to the individual watersheds. However, any balances not needed for emergency measures as provided by the Act are distributed late in the year to the watersheds where the greatest need exists and where the local people have provided the required easements and rights-of-way so as to permit installation of additional works of improvement.

c/ Loan funds are administered by the Farmers Home Administration. Because of the uncertainties in forecasting the amount and the timing of loan approvals by individual watersheds, loan funds are not distributed by watersheds.

Subwatershed Work Plans

To provide consistency between the Flood Prevention and the Watershed Protection programs of the Department, which have similar objectives, the planning criteria, economic justifications, local sponsorship requirements, cost-sharing, structural limitations and other procedures and policies used in the Flood Prevention program have been adjusted to generally parallel those of the Watershed Protection program insofar as possible. Because of the size of the 11 authorized flood prevention projects, procedures provide for development of work plans on a subwatershed basis. As of June 30, 1961, work plans had been developed for 19,933,540 acres, or about 64% of the 30,997,037 acres in the authorized portions of the 11 watersheds. During 1961, 13 work plans were developed which covered 1,277,623 acres.

Progress in Installing Works of Improvement

As of June 30, 1961, about 57% of the 31,000,000 acres in the 11 authorized watersheds was covered by soil conservation district agreements with farmers and ranchers, and basic conservation plans had been developed on 46% of the area. As of this same date, soil surveys had been made on 70% of the total area in these watersheds. Good progress is being made with the installation of planned structural and land treatment measures. A description of the conservation work being accomplished in each of the watersheds follows (the estimated Federal cost for each watershed reflects 1960 prices, and adjustments in project plans based on current outlook):

Buffalo Creek Watershed, New York

Estimated total Federal cost	$4,717,185
Total obligations through June 30, 1961	3,896,963

The Buffalo Creek Project is located in the extreme western part of New York State and covers an area of 279,680 acres in Erie and Wyoming Counties, including 13,440 acres within the City of Buffalo. The principal purpose of the project is to reduce siltation in the Buffalo River portion of Buffalo Harbor by controlling streambank erosion and reducing erosion from roads and farmlands. About 44% of the area is cropland, 19% pasture, 10% idle land, 20% woodland, and 6% roads, urban land, etc.

Of the 3,890 landowners in the watershed, 866 were soil conservation district cooperators, as of June 30, 1961. Of these 695 had developed basic conservation plans covering 68,357 acres. Land treatment measures applied as of this same date include 28,524 acres of woodland protection, 23,928 acres of conservation cropping systems, 10,991 acres of hayland planting, 10,367 acres of tree planting, 8,433 acres of pasture improvement, 4,649 acres of stripcropping and 532 farm ponds. Planned land treatment has been completed on 237 of the cooperating farms.

As of June 30, 1961, about 49 miles of the channel of Buffalo Creek and Cazenovia Creek had been stabilized by 605,711 cubic yards of excavation, 253,472 cubic yards of fill embankment and 254,681 square yards of riprap. One rock filled concrete crib dam had also been constructed as a stream gradient control measure. About 249 acres of critical area planting and 191 acres of tree planting had been completed on steep eroding areas.

Middle Colorado River Watershed, Texas

Estimated total Federal cost	$34,356,957
Total obligations through June 30, 1961	10,805,004

The Colorado River Project includes approximately 4,613,000 acres of the middle section of the Colorado River Watershed of Texas. A total of 14 subwatersheds have been delineated for work plan development. The principal problems in the watershed are floodwater and sediment damages to agricultural lands. Practically all of the agricultural land in the watershed is privately owned.

As of June 30, 1961, about 67% of the operating units in the watershed were under agreement with local soil conservation districts. These cooperators had prepared 4,071 basic conservation plans covering about 2,739,000 acres and land treatment work was progressing at a rapid rate.

Structural measures installed, as of June 30, 1961, include 73 floodwater retarding structures, 5 miles of diversion construction, 4.7 miles of levees and dikes, 5.2 miles of channel excavation, and 683 acres of revegetation. Thirty-eight structures have been released to local sponsors for operation and maintenance.

Six county commissioner courts have agreed to assist soil conservation districts and other local sponsors in securing land rights and in carrying out their responsibilities for operation and maintenance of structural measures. The City of Brady has entered into an agreement to co-sponsor the Brady Creek Subwatershed and to operate and maintain a multiple-purpose reservoir currently under construction. This reservoir will have a total capacity of 90,000 acre-feet, of which 24,000 acre-feet is to be municipal water storage. The estimated cost of the Brady reservoir is $2,423,950, of which $1,574,828 is allocated as local cost. The Farmers Home Administration has made a loan to the City of Brady in the amount of $1,570,000 to finance the local share of the costs of this multiple purpose structure.

The local people in other subwatersheds have made considerable progress in securing easements during the 1961 fiscal year. It is expected that 30 additional floodwater retarding structures and 2.0 miles of channel improvement will be constructed during the 1962 fiscal year.

Coosa River Watershed, Georgia and Tennessee

Estimated total Federal cost	$10,741,981
Total obligations through June 30, 1961	4,971,048

The Coosa River Project covers approximately 1,339,400 acres in northwestern Georgia and a small portion of southeastern Tennessee. It is divided into 17 subwatersheds for planning and applying the flood prevention program. The principal problems in the watershed are erosion, floodwater, and sediment damage to agricultural lands, county roads, and other improvements. About 85% of the authorized area is privately owned and 130,350 acres is in national forest. The work is being carried on in cooperation with four local soil conservation districts.

As of June 30, 1961, subwatershed work plans had been prepared and works of improvement were being installed in 14 subwatersheds covering 957,155 acres. Structural measures installed include 57 floodwater retarding structures, 52 miles of channel improvement, 30 miles of grade stabilization, 331 miles of roadside erosion control, and 18,387 acres of critical area plantings. Cooperative fire control systems have been set up by the Forest Service for about 168,800 acres.

Good progress is being made in the installation of land treatment measures. As of June 30, 1961, more than 4,000 farmers, or 62% of the operating units, were cooperating in the program. Of these 3,730 had developed basic conservation plans covering 364,700 acres. Land treatment measures installed include 5,465 acres of revegetation of critical areas, 284 miles of terraces and diversions, 2,669 acres of tree planting, 553 farm ponds, and 441 acres of waterway development. Many other practices are also being applied to conserve soil and water on cooperating farms.

In February 1961 several subwatersheds of the Coosa River were tested by rains of an estimated 25 year frequency. From 10 to 14 inches fell in a six-day period with about 5 inches in one 8-hour period. The installed watershed works of improvement generally proved their effectiveness in minimizing flood damage. In the Settingdown Creek subwatershed, 90% of the land treatment and all of the structural measures had been completed at this time. The completed works of improvement in this project saved an estimated $2,500 in damages to fences, $16,000 in damages to bridges, and $11,400 in damages to pastures. The Pumpkinvine Creek subwatershed suffered little damage from floodwater or sediment below the 9 completed floodwater retarding structures. However, extensive damages occurred in untreated areas of the project. It was also estimated that five bridges crossing Noonday Creek were saved by the five completed floodwater retarding structures.

Little Sioux River Watershed, Iowa and Minnesota

Estimated total Federal cost	$33,413,313
Total obligations through June 30, 1961	11,978,971

The Little Sioux Project is 135 miles long and its greatest width is 50 miles. It extends from southwest Minnesota to a point of confluence with the Missouri River midway between Sioux City and Omaha and contains about 2,880,000 acres of which 1,740,800 are authorized for flood prevention work. The soils of

the area are wind-deposited material commonly found in depths of 25 to 50 feet and frequently 100 feet or more. Although highly productive, these soils are very susceptible to sheet and gully erosion. Gullies of 20 to 40 feet in depth are common and in some instances they are even deeper.

Land voiding and other damages resulting from gully erosion are greatly affecting the economy of many farm units in both the uplands and the bottom lands which lie in the Missouri River flood plain. Much of the upland is being destroyed by gully erosion, crops in the 200,000 acre flood plain are frequently damaged by flooding, and channels of the complex drainage system are choked by deposits of sediment.

Eight soil conservation districts are principally concerned and four other districts have some interest in the program. All are represented on the Little Sioux Works Committee which provides over-all guidance and establishes priorities for the work. Work plans have been prepared and approved covering 101,426 acres. Four other subwatershed work plans are currently being prepared.

Structural measures installed as of June 30, 1961, include 221 floodwater retarding structures, 314 sediment control and gully stabilizing structures, 301 acres of grassed waterways, 68 miles of channel improvement, 23 miles of diversions, 15 miles of dike construction, and 11 miles of floodways. About 782 miles of detention terraces have been installed.

Of the 8,690 operating units in the authorized part of this watershed, 3,990 were cooperating in their soil conservation district programs as of June 30, 1961. These cooperators had developed 3,026 basic farm conservation plans, comprising 569,131 acres. About one-fourth of the basic plans had been fully applied on the land. The major land treatment measures applied include 20,223 acres of pasture planting, 2,973 acres of stripcropping, 3,351 miles of terraces, and 4,096 acres of grassed waterways. Considerable drainage work has also been done as a part of the program.

Relatively high flows were observed in principal tributaries of the Little Sioux River in April of 1961. It was noted by the local people that the applied program in Wolf Creek tributary was continuing to produce beneficial effects. In the West Fork tributary watershed, where only a small amount of conservation work has been installed, the stream channel reached bank-full stage with slight overflow damaging a few small areas. At the same time, Wolf Creek, which would normally reach about the same stage, crested at less than half of capacity due to the installed flood prevention program. Local people have made many observations and comparisons of the work on the bottom land area and have indicated considerable support for the upland watershed program. Local county municipal governments are continuing to give strong support to the program.

Little Tallahatchie River Watershed, Mississippi

Estimated total Federal cost	$20,129,705
Total obligations through June 30, 1961	8,383,513

The Little Tallahatchie River Project is in north central Mississippi and comprises 963,977 acres of land. About 80% of the land area is privately owned, 10% in national forest, and 10% devoted to Sardis Reservoir. The project is divided into 16 subwatersheds for the purpose of making work plans

and carrying out operations. These subwatersheds are sponsored by a water management district organized for each subwatershed and the Tallahatchie River Soil Conservation District.

The principal problems in the watershed are floodwater and sediment damages to agricultural lands. About 45% of the watershed is woodland, 25% in cropland, 9% in pasture, and 21% idle or miscellaneous uses. There are 6,387 operating units in the project, of which 4,544 are soil conservation district cooperators. These cooperators have developed 3,244 basic farm conservation plans covering 407,063 acres.

Land treatment measures (including treatment of critical areas) estimated to cost $9,000,000 to install have been planned. About 50% of these practices had been installed as of June 30, 1961. Conservation crop rotations had been established on 119,204 acres; pasture planting on 81,669 acres; grasses, legumes, and tree planting on 118,515 acres of critical areas. A total of 582 miles of roadside erosion control, and 457 miles of diversions had also been established.

Structural measures are estimated to cost $9,190,000. Thirty-six of the 66 planned floodwater retarding structures had been completed and 5 more were under contract as of June 30, 1961. About 280 miles of stream channel improvement had been completed and 58 sediment control structures installed. Easements and rights-of-way valued at $150,000 have been obtained from 210 landowners. This work has been done by the water management district commissioners for each of the subwatersheds in operation.

The effectiveness of this project has been proven in many ways. For example, 375 landowners who operate 18,000 acres of flood plain land on the main stem of the Tallahatchie River in Union County have benefited from the construction of 30 miles of channel improvement. The completion of 14 floodwater and sediment structures and other work in the Greasy Creek subwatershed has resulted in eliminating about $40,000 in damages that normally occur each year. Over 3,000 acres of fertile flood plain land in Cone Creek subwatershed in Tippah County were improved with 12 miles of channel improvement. About 2 million pine seedlings were planted in this subwatershed to stabilize gullied areas.

Los Angeles River Watershed, California

Estimated total Federal cost	$48,435,349
Total obligations through June 30, 1961	13,476,708

The Los Angeles River Project covers 536,960 acres, of which 73% is privately owned and 27% in the Angeles National Forest. The Department of Agriculture is cooperating with the Los Angeles Flood Control District in the development of this project. Flood prevention works of improvement on private lands are carried out through the Soil Conservation Service and those on Federal lands by the Forest Service. The upstream works of improvement being installed supplement the improvements being made by the Corps of Engineers on the principal river channels.

This watershed is characterized by high intensity rainstorms of short duration. Erosion in the Watershed is severe during peak runoff and the sediment is deposited on the relatively flat valley floor during flood flows. Channel capacity from the steep canyons to the Los Angeles River is very poor and of inadequate size for normal winter runoff in most cases. When the project was authorized, about 22% or 116,065 acres were devoted to agriculture and grazing, however, there has been a material increase in urban development of the area in recent years with a corresponding decrease in agricultural use. For that reason most of the land treatment now in progress consists mainly of street and storm drains planned and constructed by local agencies.

Structural measures completed as of June 30, 1961, on the private land portion of the watershed include 234 grade stabilization structures, 13 miles of streambank and channel stabilization, 28 miles of channel capacity improvement, 4 miles of waterway improvement, 8 stabilization and sediment control structures, and one desilting basin. Work currently underway includes 1.7 miles of lined channel construction for improvement of the 4th Unit of Bull Creek and 1.3 miles of concrete lined channel for improvement of the 1st Unit of Limekiln Creek. Plans and design for the 2nd Unit of Limekiln Creek, involving 1.5 miles of concrete lined channel with a debris dam and basin, and for Santa Susana Creek, involving 1.8 miles of channel, were being prepared by Service personnel as of June 30, 1961.

Work done in the Angeles National Forest by the Forest Service during the 1961 fiscal year includes the completion of three channel stabilization structures in Santa Anita Canyon and 12 in Sawpit Canyon. Three other structures were in various stages of construction at the end of the year. These installations necessitated the construction of about a mile of access road. Surveys and plans were completed for 18 other structures. Increased emphasis was also placed on fire control because of one of the most severe fire seasons in history. A fire break 300 feet wide and 5.3 miles long was constructed from Brown Mountain to Angeles Crest Highway, and the Spanish Canyon fire break was resprayed. Another 24.5 miles of firebreak was constructed and 30.1 miles maintained. Thirty helispots were built and another 40 maintained. Much of this work and some pre-attack activities on non-Federal land were accomplished through cooperative arrangements withthe Los Angeles County Fire Department.

Although design storms have not occurred subsequent to completion of the various structures, there is much evidence which indicates the effectiveness of the measures installed. Runoff, which normally over-topped natural channels and resulted in considerable damage, is now being safely carried to the Angeles River and flood control basins installed. The channel improvement works constructed under this program have proven to be adequate for the areas served.

Potomac River Watershed, Md., Pa., Va., W. Va.

Estimated total Federal cost	$29,350,308
Total obligations through June 30, 1961	4,886,547

The authorized area of the Potomac River Project covers 4,205,400 acres in parts of four States. Three subwatersheds comprising 229,791 acres in Virginia and three comprising 228,324 acres in West Virginia have been approved for installation of planned works of improvement. Subwatershed

planning has been confined mainly to the Upper Potomac River tributaries in these two States. The principal problems are flooding and sedimentation of agricultural lands and floodwater damages to towns, highways, and bridges. The development of a subwatershed work plan for Briery Branch, and a preliminary evaluation for a comprehensive work plan for the entire North River subwatershed in Virginia was underway as of June 30, 1961.

The application of land treatment measures is being accelerated in most of the project area. Of the 14,194 operating units as of June 30, 1961, about 8,500 were cooperating with local soil conservation districts, and 6,099 had developed basic plans including 1,119,710 acres. Soil surveys had been made on more than three million acres of the project areas as of this same date.

Some of the major land treatment measures installed in the subwatersheds as of June 30, 1961, include 66,826 acres of crop rotations, 13,065 acres of contour farming, 43,032 acres of pasture planting, 270,075 acres of pasture improvement, 5,610 farm ponds, 38,905 acres of stripcropping, 3,116 acres of tree planting and 399,434 acres of woodland protection. Forest Service accomplishments as of June 30, 1961, in the George Washington National Forest, include 51 miles of erosion control on logging roads, tree planting on 2,423 acres, 7,610 acres of woodland grazing control, and 4,216 acres of hydrologic stand improvement.

The principal structural measures installed for flood prevention as of June 30, 1961, include 27 floodwater retarding structures, 122 miles of channel stabilization, 62 miles of channel improvement, 103 miles of roadside erosion control, and 3,630 acres of critical areas planted to grasses and legumes.

Santa Ynez River Watershed, California

Estimated total Federal cost	$10,718,000
Total obligations through June 30, 1961	2,799,052

The Santa Ynez Project covers 576,000 acres, of which about 10% is in subwatersheds in the westerly portion of the basin where the Department is currently installing works of improvement for flood prevention. Floodwaters from deeply entrenched canyons flow over privately owned cultivated lands which are intensively used for vegetable and flower seed production. Flood flows also cause damage to homes, highways, railroads, and multi-million dollar defense installations. Structural measures are designed to prevent degrading of entrenched gullies and to confine floodwater to improved channels across the flood plains. Land treatment measures, including fire prevention, are applied to prevent erosion and to improve soil fertility.

About 95% of the planned land treatment measures had been applied at an estimated cost of $254,000 as of June 30, 1961. Of the 267 farmers in the subwatersheds, 169 were cooperating in their district soil conservation programs and 144 had developed basic conservation plans for their land as of this same date. The more significant measures installed include 41.8 miles of diversions, 398 erosion control structures, 14,483 acres of cover cropping, 51,708 acres of range properly grazed and 173 farm ponds.

Planned structural measures on six of the nine subwatersheds had been completed as of June 30, 1961, at a Federal cost of $1,347,629 for construction. Measures completed as of this date include 14 miles of floodwater diversions, 120 grade stabilization structures, 6 sediment control structures, 3 miles of streambank protection, 6 miles of stream channel improvement and 127 acres of critical area planting.

Easements and rights-of-way for the Rodeo-San Pasqual subwatershed were being secured by the local sponsors as of June 30, 1961, at an estimated non-Federal cost of $88,100. In addition, the moving of utilities, construction of bridges and other non-Federal costs are estimated at $263,700. A Federal construction contract for 4.1 miles of reinforced concrete channel, one debris basin and inlet and outlet structures will be awarded later in the fiscal year 1962. The floodway when completed will provide protection for valuable farm lands in the lower valley and a portion of the Pacific Missile Range of the Navy.

Operation and maintenance of the planned fire prevention and control program continued to be a major accomplishment of the Forest Service during the fiscal year 1961. Additional fire pre-attack planning was completed on parts of two blocks. The remaining fire prevention work is mostly in the San Rafael wild area which will require costly hand construction of fire lanes and helispots. No fire burns of any appreciable size occured in the Santa Ynez watershed during the fiscal year 1961.

While the watershed area has experienced three dry years, the installed structures and channels tested to date have proven their benefit over the [illegible]. Ranchers have been able to raise truck crops on fields formerly inundated and farm-to-town roads have been kept open and free from water and debris.

Trinity River Watershed, Texas

Estimated total Federal cost	$90,400,889
Total obligations through June 30, 1961	20,834,943

The authorized area of the Trinity River Project consists of the upper 8,424,?10 acres of the Trinity River and is divided into 54 subwatersheds for work plan development. The principal problems are floodwater and sediment damage to agricultural lands, practically all of which are privately owned.

As of June 30, 1961, about 26,000 farmers and ranchers in the authorized portion of the Trinity basin were cooperating with local soil conservation districts. About 77% of these cooperators had developed basic conservation plans covering 4,073,759 acres in their farms and ranches. The application of land treatment measures is proceeding rapidly. During the 1961 fiscal year, 10,095 district cooperators and other farmers were furnished technical assistance for this purpose.

Construction has been completed on 281 floodwater retarding structures as of June 30, 1961, of which 150 have necessary vegetation established. Local sponsors have assumed responsibility for operation and maintenance of these structures. Construction contracts for another 37 floodwater retarding structures have been let and 41 other structures along with 7 miles of channel improvement have been designed.

Good progress continues to be made by local sponsors in obtaining land right needed for installation of planned structural works of improvement. Sixteen county commissioner courts have entered into agreements to co-sponsor projects in the Trinity watershed and to assist sponsoring local organizations in carrying out their responsibilities for operation and maintenance and securing land rights for structural measures.

Washita River Watershed, Oklahoma and Texas

Estimated total Federal cost	$73,850,559
Total obligations through June 30, 1961	28,624,137

The authorized area of the Washita River Project covers 5,095,040 acres, divided into 64 subwatersheds for work plan development, local participation, and project operations. About 94% of the authorized area is in Oklahoma and 6% in Texas. The major problems in this watershed include erosion of the uplands and frequent flooding of 265,000 acres of bottom land along the tributaries and 112,000 acres on the main stem of the Washita River.

The planned program entails reduction of soil erosion, floodwater, and sediment damages through a coordinated program of land treatment and structural measures. In some instances, storage for irrigation, recreation, and municipal water uses are provided where the local people provide the funds to cover the additional cost.

Local cooperating agencies, such as watershed associations and soil conservation districts have been stimulating local activity in each watershed. Guidance is furnished on priorities of work by over-all leadership in subwatersheds through the Washita River Flood Prevention Council. The council is made up of members of the boards of supervisors of each soil conservation district, and the officers and directors of the watershed associations concerned.

Land treatment measures installed for watershed protection and flood prevention have continued to be very effective through the years. Of the 18,334 operating units in the project area, 13,752 farmers were cooperating with their soil conservation districts and 12,257 had developed basic plans on 3,235,201 acres, as of June 30, 1961. Land treatment measures applied, as of this same date, include 495,510 acres of crop rotations, 478,883 acres of contour farming, 580,119 acres of crop residue use, 2,837 miles of diversions, 199,510 acres of pasture planting, 17,363 farm and ranch ponds, 423,614 acres of range seeding, 24,420 miles of terraces, 2,479 acres of critical area planting, and other practices essential to the conservation of the area.

Good progress is being made with the installation of structural measures for flood prevention. As of June 30, 1961, plans had been made to construct 846 floodwater retarding structures, of which 370 had been installed, another 96 contracted, and 61 others designed. The completed structures provide for 312,759 acre-feet of storage. In addition, 116 sediment control structures, 37 miles of floodwater diversions, and 120 desilting basins had been built. Gully stabilization had also been completed on 396 acres. All structures on 22 subwatersheds have either been completed or are now under contract. Construction of 20 floodwater retarding structures on Criner Creek subwatershed was completed in a little more than one year from the date local sponsors reported all sites cleared with easements.

The local sponsors, flood prevention associations, chambers of commerce, boards of county commissioners, pipeline companies, rural electric cooperatives, the Governor of Oklahoma, and Federal and State agencies have all cooperated or participated in the development of work plans, obtaining easements, and in installation of land treatment and structural measures in the subwatersheds.

All easements are obtained on Washita subwatersheds prior to beginning construction. Progress in obtaining easements has been good. Recent accomplishments include the raising of about $90,000 by donations for clearing the hard-to-get easements on the second segment of Wildhorse Creek subwatershed. The local sponsors expect to clear 21 sites on this subwatershed early in the fiscal year 1962. All easements and rights-of-way were cleared on Soldier Creek in less than a year after project approval, and construction may now proceed on the entire watershed in 1962. Sugar Creek and Cherokee Sandy subwatersheds are also cleared for construction. Sponsors expect to clear four subwatersheds, Rock, Washington, Beaver, and Kickapoo Sandy Creek for construction in the fiscal year 1962. All land rights have been obtained for the planned structures in the Texas portion of this watershed.

During the 1961 fiscal year, the completed subwatersheds withstood storms which would have caused serious floodwater and sediment damages if the land treatment and structural measures had not been installed. On June 25th, the rainfall varied from 3 to 4 inches in one hour on Saddle Mountain Creek. Since the only flooding that occurred was less than one foot deep, damages were insignificant. No wheat or cotton was lost to flooding on Sandstone, Kiowa, Barnitz, or Cavalry Creeks. These crop yields per acre in 1960 have been the highest in history. Since these areas were also farmed before the projects were installed, the increased yields are indicative of the reduction of floodwater and sediment damages.

Fishing and boating are being enjoyed in the upper end of the Washita. For example, the Forest Service has developed a recreational area on site #4 near Cheyenne which 675 people visited one Sunday afternoon.

The Washita Council has set forth a detailed plan as a goal for completion of the project. Continued at the 1961 rate, most of the subwatersheds could be completely treated by 1970.

Yazoo River Watershed, Mississippi

Estimated total Federal cost	$55,436,473
Total obligations through June 30, 1961	16,353,506

The authorized area of the Yazoo River Project includes 3,222,400 acres of which 227,975 are publicly owned. The principal problems are floodwater and sediment damages to agricultural lands. About 39% of the watershed is in woodland, 25% in cropland, 14% in pasture, and 22% miscellaneous uses, idle, and reservoirs. The entire watershed is covered by 16 soil conservation districts.

Of the total of 17,785 operating units in the watershed as of June 30, 1961, about 12,000 were cooperating in the district programs, and 9,284 of these cooperators had developed basic conservation plans on 1,598,143 acres. The major land treatment measures installed include 421,499 acres of conservation rotations; planting of 283,637 acres of critical lands to grasses, legumes, and woody plants; pasture planting on 240,075 acres; drainage of 68,400 acres; construction of 1,020 miles of diversions; treatment of 2,081 miles of roadside with erosion control measures; and construction of 6,121 small sediment control structures. Over the past five years an average of 30,000,000 trees have been planted each year within the Yazoo watershed.

As of June 30, 1961, a total of 55 floodwater retarding structures had been completed. Another 17 structures had been contracted and 18 more were designed. Other structural measures completed include 85 large stabilization and sediment control structures, 550 miles of stream channel improvement, including excavation, bank stabilization, jetties, clearing, and snagging. Seventeen construction contracts, involving 47 floodwater retarding dams and four channel improvement projects, are scheduled for 1962 fiscal year.

Very good progress is being made in securing easements. Local water management districts are taking the initiative in acquiring easements and in most subwatersheds are proposing to purchase them. In a few cases, however, condemnation proceedings will be necessary. Indian Creek subwatershed in Panola County and Askalmore Creek in Tallahatchie County have secured loans and necessary court action to clear all easements required for construction in early fiscal year 1962.

The installed land treatment and structural measures have been tested and their effectiveness proved. On February 18 and 19, 1961, a heavy rainstorm crossed the Yazoo River watershed. Over a five-county area the rainfall ranged from 8 to 10 inches. Forty-five floodwater retarding structures had been completed in this area prior to the storm, and there was no flooding immediately below any of these structures. Had these measures not been installed there would have been extensive damage. In the Bogue Creek subwatershed, comprising 161,000 acres, where 20 structures had been completed, there was also no flooding. This storm would have flooded over 10,000 acres and caused extensive damages before the dams were completed. The program has also been very effective in other subwatersheds where the work is installed.

Works of Improvement Installed in the Eleven Authorized Watersheds

Type of Improvement	Unit	1961 Accomplishments (Actual) With Flood Prevention Funds	1961 Accomplishments (Actual) With Conservation Operations Funds	Total on the land 6/30/61
Structural Measures:				
Floodwater retarding structures	No.	163	--	1,120
Stab. & Sed. Control Strs.	No.	38	--	889
Silt and debris basins	No.	3	--	249
Outlet construction	Miles	--	--	11
Grassed waterways	Acres	112	--	301
Channel stablization	Miles	7	--	228
Channel improvement	Miles	37	--	1,097
Diversion construction	Miles	1	--	95
Levees and dikes	Miles	--	--	32
Channel excavation	Miles	1	--	21
Roadside erosion control	Miles	216	--	3,098
Revegetation	Acres	14,150	--	364,023
Land Treatment Measures:				
Contour farming	Acres	119,941	160,803	2,201,599
Cover cropping	Acres	110,712	120,870	724,121
Crop residue utilization	Acres	198,758	226,098	1,764,547
Diversion construction	Miles	116	123	7,218
Erosion control str.	No.	767	145	11,010
Pasture planting	Acres	68,490	55,191	1,122,937
Pond construction	No.	967	1,536	70,503
Range seeding	Acres	15,374	21,875	486,464
Stripcropping	Acres	1,538	2,442	55,359
Stubble mulching	Acres	24,611	35,201	94,708
Terracing	Miles	891	895	71,777
Tree planting	Acres	10,455	3,072	105,929
Waterway development	Acres	1,736	1,318	54,639
Wildlife area improvement	Acres	1,082	1,063	176,758
Woodland protection	Acres	22,222	14,620	1,056,786
Improvement cutting	Acres	3,894	6,888	132,741
Forest Fire Control:				
(a) Fire control roads, trails and fire breaks.	Miles	17	--	660
(b) Structures	No.	4	--	134
(c) Heliports and Helispots	No.	--	--	377
(d) Mobile equipment	No.	1	--	33
(e) Permanent radio installations	No.	1	--	209
(f) Telephone lines	Miles	--	--	231

Emergency Measures

Section 216 of the Flood Control Act of 1950 authorizes the emergency treatment of watersheds impaired by fire or other similar disasters to prevent loss of life or serious flood and sediment damage. Ten such watersheds involving 40,185 acres of newly burned forest and rangeland were treated during the fiscal year 1961 at a total cost of approximately $143,569. Local beneficiaries contributed about $20,200 and the Federal Government financed the remaining $123,369 from flood prevention funds for "emergency measures."

All of the areas treated were located in Southern California. Most were on national forest land. Approximately 271,290 pounds of rapid growing mustard, rye grass, brome, and other grasses were sown by airplane or helicopter to provide an immediate protective cover over most of the burned acres.

Progress in Basic Data Collection

The Southern Forest Experiment Station of the Forest Service continued work on the collection, analysis, and interpretation of basic surface runoff data and erosion conditions as related to slope and forest cover conditions in the Little Tallahatchie and Yazoo River Flood Prevention Projects in Mississippi. The collection of basic data is done by Forest Service personnel assigned to these projects. Analysis and interpretation is being done by the experiment station as a contribution to the project programs. Information of this nature is urgently needed, and as results are obtained, they are being used by technicians to improve the design of land treatment and structural measures.

Facilities used to obtain basic data include stream gages, precipitation gages, and sediment sampling stations in nine small watersheds. Three of these small natural drainage units are located in each of the following cover types: (1) abandoned, actively eroding, formerly cultivated lands which are reverting to forest cover; (2) depleted upland hardwood forest; and (3) loblolly pine planted over 20 years ago on abandoned cropland.

LOANS AND RELATED EXPENSE

Under Section 8 of Public Law 566, 83rd Congress, as amended by Public Law 1018, 84th Congress, and Public Law 468 of the 86th Congress, loans are authorized to be made to local organizations to finance the local share of the cost of installing planned works of improvement in the 11 watersheds authorized by the Flood Control Act of December 22, 1944. The Farmers Home Administration is responsible for making these loans. The loans will be made for acquisition of land, easements and rights-of-way which the local organizations find they must purchase, and for the allocated local share of the cost of multiple-purpose projects, including organizational expenses and legal costs. Three loans amounting to $1,655,000 have been approved to sponsoring organizations in the 11 authorized watersheds as of June 30, 1961. There are six other applications totaling $785,000 on hand. Two of the approved loans and one of the pending applications include funds for incorporating municipal water storage in floodwater retarding structures. The other applications were all from drainage

districts requesting funds for legal fees and the acquisition of lands, easements and rights-of-way. Following are representative examples of the loans approved in the authorized watersheds:

1. City of Brady, Texas (Middle Colorado River Watershed): The first loan made to a sponsor in one of the 11 authorized watersheds was made in the amount of $1,485,000 to the City of Brady to provide funds for the purchase of land, relocation of a railroad in the reservoir area, legal expenses and the city's share of construction and engineering costs. Structural measures to be installed include a multiple-purpose reservoir to provide 66,000 acre-feet for flood control and 24,000 acre-feet for municipal water storage.

2. Askalmore Drainage District Number One, Miss. (Yazoo River Watershed): A loan of $70,000 was made to the Askalmore Drainage District Number One to pay costs of land acquisition, legal fees, and preliminary expenses to construct 7 floodwater retarding structures and diversion ditches. Improvements proposed will provide substantial flood prevention and drainage benefits to 20,792 acres.

PASSENGER MOTOR VEHICLES AND AIRCRAFT

Purchase of passenger motor vehicles

During fiscal year 1963 it is proposed to replace 137 passenger cars, 18 of which are station wagons, all of which will meet replacement standards. It is also proposed to purchase 42 additional passenger cars. In a few instances due to actual program needs, it may be necessary to substitute a sedan for a station wagon or vice versa at the time orders are placed which could make a minor change in the relative number of sedans and station wagons shown, but this would not change the total number of passenger motor vehicles scheduled for replacement and addition.

Based on the planned schedule of replacements and purchase of additions, the Forest Service will have a total of 670 passenger vehicles, including 3 busses, in fiscal 1963. On analysis of vehicle use and age pattern, the fleet is expected to include 232 units which will meet or exceed replacement standards before replacements are received.

As of June 30, 1961, the age and mileage classes of the Forest Service net active fleet exclusive of 3 busses were:

Age Data		Mileage Data	
Year Model	No. of Vehicles	Lifetime Mileage	No. of Vehicles
1956 or older	115	80,000 to 100,000	7
1957	117	60,000 to 80,000	110
1958	123	40,000 to 60,000	175
1959	83	20,000 to 40,000	141
1960	75	0 to 20,000	178
1961	98	Total	611
Total	611		

Use of vehicles

Passenger motor vehicles are used by (1) forest officers in the protection, utilization, management, and development of the national forests and land utilization projects and in the program for control of forest pests; (2) research technicians on experimental forests and ranges, on field research projects and forest surveys; (3) foresters engaged in carrying out the laws providing for State and private forestry cooperation; and (4) regional office field-going administrative officers in performing, directing, and inspecting field work.

The Forest Service is essentially a field organization and its passenger motor vehicles are located mainly at regional, national forest, and ranger district headquarters, and experimental forests and ranges. There are over 232 million acres within the exterior boundaries of the national forests. About 435 million acres of State and private forest land are included within the areas which benefit from Federal participation in the cooperative forest program. Much of this area is without common carrier

service, and most forest areas and research centers are remote from commercial travel routes, requiring extensive use of motor vehicles as a means of transportation. The major portion of transportation needs, particularly at forest regional and supervisor levels and at other larger headquarters, involves multiple passenger use and can be more expeditiously and economically met by use of sedans and station wagons than by other types of vehicles.

Justification of replacements

Dependability of passenger vehicles is an important factor in keeping work programs on schedule and in meeting emergencies. Vehicle breakdowns while on field travel cause disruptions and delays in field work as well as loss of effective work time of employees. The continued use of over-age equipment is undesirable from a safety standpoint since most of it is operated over rough narrow winding roads in mountainous country under adverse conditions. This use generally results in excessive operating and repair expenses when vehicles reach or exceed replacement standards.

In order to maintain passenger cars in a safe and satisfactory operating condition, it is the policy of the Forest Service to schedule periodic preventive maintenance inspections, services, and tune-ups to reduce the necessity for costly repairs and major overhauls, and to minimize lost time resulting from field breakdowns.

It is desirable to maintain a reasonable balance in the age class of the passenger vehicle inventory. The age class distribution is based upon conforming with replacement standards which recognize that some units will be retired under the age standard and others under the use standard. Prescribed replacement standards, although applicable, are not always appropriate for all Forest Service vehicles because of the wide range of operating conditions and the comparatively short field season in many of the national forests at higher elevations. Decision on replacement of passenger vehicles which reach replacement age is based on an appraisal of each unit. This involves a review of the history record combined with a mechanical inspection of the vehicle's condition and repair liability. When such appraisal indicates that the vehicle is satisfactory for further service without unreasonable repair expenditures, it is retained and assigned to lighter work, even though such action tends to upset the age standards for the fleet inventory.

The vehicles selected for replacement are those which cannot be operated another season without excessive repair expense. They are unsatisfactory for further use both as to safety and mechanical condition. The passenger car replacements requested for fiscal year 1963 exceed the number requested in fiscal year 1962 by only 2 units. The increased replacement authorization to a total of 137 units compared with 135 in fiscal year 1962 is within the normal annual replacement standards prescribed by General Services Administration.

Essentially all passenger vehicles are pooled for use by all activities with replacement of pooled units financed from a Working Capital Fund. All appropriations reimburse this fund in ratio to use of vehicles on activities financed by the respective appropriations.

Justification of the additional vehicles

The Forest Service analyzes current work plans and programs in determining its overall passenger car requirements. This analysis includes a careful study of the number of vehicles needed at each field station, using as a guiding principle the ownership of only the minimum number of dependable units required to serve programs for which funds are budgeted. Also, it is Forest Service policy to utilize Inter-Agency Motor Pools of the General Service Administration or commercial car rental services to the fullest practicable extent. Passenger car use is restricted and is integrated with various activities so as to attain good utilization of all vehicles. During the past several years, there has been a steady reduction in the number of passenger cars owned by the Forest Service. This has been possible because of better utilization practices and through the assistance of Inter-Agency Motor Pools. Because of this reduction, it is becoming more difficult to meet requirements for passenger car transportation resulting from increasing job loads. Expanding activities in research, timber sales, public use of recreational facilities, fire protection and other land management activities, are increasing the need for more passenger cars. These increasing needs are being met in some areas through greater use of Inter-Agency Motor Pool vehicles. These pools, however, serve only very small parts of the total land area administered by the Forest Service; therefore, increasing requirements for passenger car transportation in several areas cannot be fully met except through purchase of additional units for the Forest Service fleet.

Replacement and addition of aircraft

The 1963 estimates propose replacement of one aircraft by purchase, four by transfer from other agencies as available, and addition of two aircraft by purchase or transfer. The Forest Service currently has 58 aircraft:

12	light reconnaissance airplanes
16	medium and heavy cargo and transport airplanes (10 medium; 6 heavy)
23	T-34B lead airplanes (2-place scout)
4	bomber-type airplanes (chemical tankers)
1	helicopter
2	forest spray airplanes (Stearman and TBM)

The reconnaissance and transport aircraft are used primarily to transport firefighters, smokejumpers, administrative personnel, equipment and supplies to remote and inaccessible areas where commercial service is inadequate, or not available for detection and suppression of forest fires. They are also used to locate and survey timber stand and vegetation conditions such as insect infestations, blowdown, diseased areas and undesirable species, and to appraise resources and damage and evaluate effectiveness of control.

The T-34B "lead" aircraft are used primarily by air attack bosses to direct and control the dropping of fire retardants on forest fires by more than 150 tanker aircraft (mostly contracted from private owners).

The bomber-type aircraft are used as air tankers for bulk dropping of retardants on forest fires, training Forest Service personnel as lead plane pilots and developing and testing new and improved methods of dropping fire retardants.

The helicopter is used for training forest personnel in tactical use of helicopters and experimental development of techniques and equipment for direct tactical suppression of forest fires.

The two additional aircraft requested will be one medium and one large cargo and personnel transport airplanes. The need for the additional large aircraft results from the rapid increase in use of aircraft primarily for fire suppression and the lack of suitable aircraft available from commercial sources. During the past two years well trained, highly mobile, self-sufficient 25-men firefighting crews were established at strategically located bases in the western states. These crews are transported by aircraft to bolster suppression forces when initial attack fails or critical conditions develop anywhere in the West. Commercial sources are frequently unable to provide timely and suitable aircraft services required for the mobile crews and transportation of overhead firefighters as needed. The additional medium size aircraft will be used primarily for dropping smokejumpers and paracargo. Increased use of jumpers and rapid retrieving of them by helicopters for additional jumps requires additional aircraft.

It will be necessary to purchase a replacement for one reconnaissance aircraft which has reached an age and total number of flying hours on the air frame where it is uneconomical to overhaul or modernize it to meet Civil Air Regulation airworthiness requirements. Forest Service aircraft are operated to a large extent over a rough mountainous terrain where landing fields are poor and few. It is especially important that these aircraft be maintained for maximum performance and dependability to provide an adequate standard of safety. The replacement will be a new light twin engine aircraft which will provide greater efficiency and increased safety in case of engine failure than the present single engine aircraft now affords.

Other aircraft currently in use may be replaced as newer and more suitable models and types become available from military services as excess property. They would be obtained on transfer without reimbursement and would not increase the fleet beyond 60 aircraft. The majority of current Forest Service aircraft were manufactured during World War II and obtained from military surplus. Most of these planes have nearly reached their limit of useful age. The military services now have aircraft which have more potential suitability for Forest Service work that may become surplus in the near future. At present one reconnaissance and survey aircraft and a large cargo and personnel transport have reached the limit of economical usefulness.